THIS WEEK'S NATIONAL PETROLEUM NEWS

The Recognized Authority on News, Markets and Technical Developments in the Oil Industry

FOUNDED 1909

VOL. 27 CLEVELAND, JUNE 26, 1935 NO. 26

Coming Meetings

South Dakota Independent Oil Men's Assoc., place to be named later, July 18.

American Petroleum Equipment Suppliers' Assoc., place to be named later, some time in August.

American Chemical Society, San Francisco, Calif., Aug. 19 to 24.

Kentucky Petroleum Marketers Assn., Brown Hotel, Louisville, Ky., Sept. 4 and 5.

North American Gasoline Tax Conference, Arlington Hotel, Hot Springs, Ark., Sept. 18, 19, 20.

National Petroleum Association, annual meeting, Hotel Traymore, Atlantic City, N. J., Sept. 18, 19, 20.

Ohio Petroleum Marketers Assn., fall conference and golf tournament, Toledo, Ohio, Sept. 24, 25.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, Mid-Continent Section, Houston, Oct. 10 to 12.

National Safety Council, 24th Annual Safety Congress, Louisville, Ky., Oct. 14 to 18.

National Tax Assn., Biltmore Hotel, Oklahoma City, Okla., Oct. 14 to 19.

American Association of Petroleum Geologists, mid-year meeting, Mexico City, Mex., Oct. 16, 17. Also San Antonio section (San Antonio Geological Society).

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Published by

THE NATIONAL PETROLEUM PUBLISHING CO.

Publication Office: 1213 W. Third St., Cleveland, Ohio, Tel. CHerry 7672

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NEW YORK, T. W. Watson, 50 West 50th St., Tel. COlumbus 5-1516 and 5-1517.

CHICAGO, E. L. Barringer, Buckingham Bldg., 59 E. Van Buren St., Tel. Harrison 5901, 5902 and 5903.

Cable address: Plattoil, Cleveland

Subscription rate $5.00 per year, U. S. and Mexico; Canada, $7.50 (including duty); $6.50 Foreign countries. Current copies 15 cents; for back issues more than two months old 25 cents per copy.

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Harris & Ewing

Paul E. Hadlick

A national organization of and for independent marketers again becomes a factor in the oil industry, with the adoption of a strong program of policies by the National Oil Marketers Association at its recent meeting in Washington. The organizer of the association, Paul E. Hadlick, is by no means a newcomer to the oil industry, having been connected for many years with its marketing affairs, in the interest of first state associations and later the American Petroleum Institute. His first activity in the oil industry was as secretary of the Minnesota Oil Men's Association, starting in 1924.

In 1933 Mr. Hadlick resigned from the institute staff and became secretary of the Marketing Sub-Committee of the Planning & Coordination Committee, at Washington. He recently resigned as secretary—but holding his place on the committee—to give all his time to the affairs of the National Oil Marketers Association.

NATIONAL PETROLEUM NEWS

VOLUME 27 NUMBER 26

Draft the Code Out in the Open

(An Editorial)

BEHIND closed doors, in a suite in the offices of the Planning and Coordination Committee at Washington, some 40 oil men are sitting down to draft a code of marketing practices for the oil industry, which it will be proposed the industry voluntarily accept.

These 40 or so men comprise the Marketing Sub-Committee of the P & C Committee and about 25 "guests," executives and attorneys for oil companies, who were invited by Chairman Arnott, of the marketing committee, to take part in the committee's proceedings.

These men are entirely representatives of big companies or of refiners' associations. Their names were made public only against the desires of Chairman Arnott and through the belief of NATIONAL PETROLEUM NEWS that the oil industry generally is entitled to know the names of the men who propose to draft its marketing code.

The industry generally is also entitled to know what goes on in these sessions in which the oil code is being revised. The good that might have been accomplished through voluntary support of the P & C Committee by the oil companies in the days of the NRA code was largely lost through the policy of secrecy as regards its deliberations which was imposed by Oil Dictator Ickes.

That censorship was lifted when the code was outlawed by the Supreme Court decision. This policy of secrecy, while it was abhorrent to men in the oil business generally, had to be followed at one time, or at least many in Washington were of the opinion it had to be followed. That is not the case now and those in the councils of the industry in Washington at present should be most emphatic in making the industry know their deliberations are open.

The established independent marketing companies of the country, of whom there are many thousands, are represented in the proceedings by only two men and these men are present by virtue of being members of the marketing subcommittee of the P. & C. Committee; Paul E. Hadlick, secretary of the National Oil Marketers Association and E. V. Weber, of the Ohio Petroleum Marketers Association. As it now stands, dealers' representatives are in greater number in the proceedings than representatives of the jobbers.

The independent marketers of the country had little enough representation in the work of the P. & C. Committee during the period of the NRA code and this same lack of adequate representation is now continued in this most important work of revising the Federal Trade Commission marketing code. This is not in the best interests of the industry as a whole.

There have been too many "behind closed doors" conferences on problems of the marketing branch of the industry, where a few representatives of the larger companies have attempted to work out programs and policies for this branch of the industry to accept. These representatives have wondered why their pet programs so quickly ran into a stone wall.

Chairman Arnott's present method is not the way to set about to get a marketing code the industry will accept and put into use. It is granted that, at the start, some committee or group might meet and consider methods of procedure, even perhaps rough draft some tentative suggestions for such a code. The work of this group should be entirely in the open, however, and it should listen to anyone who has any constructive suggestions to offer. Any tentative code should be immediately placed before the entire industry for its criticism.

If a voluntary marketing code is any success at all, it must be adopted by the industry generally and, as a condition to this, the industry must have a hand in its making.

Marketing Committee and "Guests" Draft Code in Closed Session

WASHINGTON, June 25

THE work of revising the so-called American Petroleum Institute code of oil marketing practices is under way here, under the direction of the marketing sub-committee of the Planning & Co-ordination Committee.

Approximately 25 executives and lawyers of major oil companies and their subsidiaries, refiners and dealer representatives met with 14 members of the marketing sub-committee here June 24 to start the work of revising the code.

The meeting was called pursuant to the resolution adopted June 5 at the American Petroleum Institute directors' meeting in New York. This resolution appointed the marketing sub-committee as a committee of the institute's marketing division to "recommend revision of the earlier code immediately to bring it into agreement with those marketing practices which are recognized by the industry as fair and equitable so far as this may be lawfully done and with the approval of the F.T.C."

The meeting was closed to all but members of the marketing sub-committee and guests invited by Chairman Arnott.

On the motion of B. L. Majewski, a resolution was adopted stating that the meeting was called for the purpose of furnishing an "open forum" for the industry to discuss marketing rules and practices with a view to drafting a possible national code for submission to Federal Trade Commission.

There was some difference of opinion among those present as to where the code would go after the present meeting finishes its work.

"After we finish here, we will take the revised code back to the institute," said Chairman Arnott. "Then we will turn it over to the industry so that everyone can voice their opinions before we actually submit it to the Federal Trade Commission."

This seems to be contrary to the views of others present. Wilmer Schuh, Milwaukee, representative of retailers on the marketing sub-committee, said it was his understanding that the revised code would go straight to the Federal Trade Commission from the meeting.

A committee on committees was appointed which named four sub-committees to consider various related topics in the NIRA oil code and the F.T.C. code. Members of the marketing sub-committee and the invited guests were assigned to one or more of these committees. The group of major company lawyers formed another committee to advise on legal points.

THE sub-committees appointed, with the chairman, were: Committee No. 1 (equipment, painting, improvements, loaning money, lotteries, premiums), Majewski, chairman; Committee No. 2 (selling below cost, price posting, credits), Carnes, chairman; Committee No. 3 (trademarks, substitutions, tax evasion, breach of contracts, definitions, and safety), Battson, chairman; and Committee No. 4 (lease and agency), Dodge, chairman.

Members of the marketing sub-committee attending the meeting in Washington were: C. E. Arnott, Socony-Vacuum Corp.; B. L. Majewski, Deep Rock Oil Corp.; F. V. Bakeman, Eastern States Conference of Independent Oil Men's Ass'ns.; C. L. Jones, Socony-Vacuum Corp.; Russel Williams, Individual Brand Petroleum Association; E. L. Miller, San Francisco, representing West Coast oil companies; Allan Jackson, Standard Oil Co. of Indiana; J. W. Carnes, Sinclair Refining Co.; H. B. Stone, Atlantic Refining Co.; E. V. Weber, Ohio Petroleum Marketers Association; S. B. Eckert, Sun Oil Co.; W. R. Schuh, National Association of Petroleum Retailers; H. W. Dodge, The Texas Co.; and Paul E. Hadlick, National Oil Marketers Association.

The two members not present were R. K. Davies, Standard Oil Co. of California, and H. A. Cowden, Union Oil Co-operative Association.

The invited guests were:

C. M. Boggs, president, Western Petroleum Refiners Association; John E. Shatford, National Co-ordinator of Refining; E. S. Hall, Standard Oil Co. of New Jersey; W. V. Hartmann, Gulf Refining Co.; A. V. Bourque, Western Petroleum Refiners Association.

H. D. Frueauff, Cities Service Co.; C. B. Watson, Pure Oil Co.; Wiley L. Moore, Wofford Oil Co.; R. E. Browne, Pennzoil Co.; Louis Kimmel, Eastern States Conference of Independent Oil Men's Association.

Joseph P. Walsh, Sinclair Refining Co.; Carl F. Kieser, Socony-Vacuum Oil Co. Inc.; George Ray, Jr., The Texas Co.; A. E. Van Dusen, The Texas Co.; R. R. Griffin, Shell Union Oil Corp.; Fayette B. Dow, National Petroleum Association.

C. A. Johnson, Socal Oil & Refining Co.; H. T. Ashton, Lubrite Refining Co.; H. P. Reynolds, Deep Rock Oil Corp.; Jacob Blaustein, American Oil Co.; C. W. MacKay, Marathon Oil Co.; H. C. Meyer, Gulf Refining Co.; H. B. Carpenter, Ohio Oil Co.; E. F. Battson, Continental Oil Co.; E. B. Reeser, Barnsdall Oil Corp.

Thomas Control Bill Not on 'Must' List

By Teletype

WASHINGTON, June 25.—Chances of the Thomas oil control bill being enacted by Congress were conceded by its supporters today to be slim unless President Roosevelt takes a hand shortly and throws full administration support behind it.

The present session is growing shorter, and Washington weather hotter, every day. Quite a few bills on the "must" list remain unacted upon. Oil legislation so far is not on that list.

The Editor's Viewpoint

Unlimited Power Over the Oil Industry Is Possible Under Thomas Bill

By Warren C. Platt, *Editor*

IN JUDGING the much talked of Thomas bill for federal control and now before Congress, the oil industry should consider not only the intent of its supporters but what actually can be done under the powers sought to be given by the bill, particularly in the light of the far reaching aims of the Roosevelt administration.

These aims are to correct "economic maladjustments," to redistribute wealth, to raise the farmer's living to "the American standard," to compensate the farmer for his own bad planning and management and to give the farmer who was so foolish as to buy poor "marginal" land some good land to live on, as well as all the other "social security" ambitions of the administration.

What proponents of the Thomas bill want to do under it, and what the administration *MAY* do under it can be two entirely different things, and, judging from the language of the measure, they are different.

The industry should study the bill to ascertain just what can be done under it even by the most socialistically minded individual. The industry should not just rest on what the proponents say they want to do, laudable as their aims are. The industry must determine what *CAN* be done and then, if the industry does not like that possibility, it should not be hesitant in making its objections known.

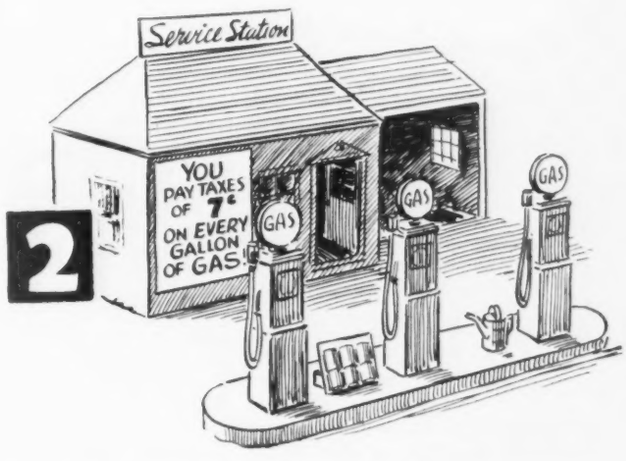
There is nothing holy about this or any other bill no matter whether the administration wants it or not. We are still American citizens with the right to hold our own opinions and to express them, whether they happen to meet the approval of those in office or not.

What every one did in slapping an NIRA and a code together in a hurry to meet an emergency is one thing but that is no controlling precedent for what should be done now. Today we are considering making a permanent law under which the administration will exercise great control over the oil industry for all time to come, or until it is amended or repealed by Congress. It cannot even be well argued that we have an emergency now because of the expiration of the code June 16th, as the oil industry has the Connally law and what seem to be quite effective state laws that, for the moment at least, are doing a good job at holding crude oil production to reasonable market demand.

Every indication is that present state oil policies will continue at least until long after the next session of Congress has convened and up to that time no very important new pools can be developed in states not having conservation laws. Hence there is plenty of time for the entire industry to study and discuss the Thomas bill and any other measures that may be offered. No action on the Thomas bill is justified at this session unless the entire industry knows all about what it will do and is for it.

The Thomas bill should be considered for the power that it gives the administration over the oil industry. The aims stated in the bill are fine and we all agree with them but what about the power that is actually given? Can that power be used only to the extent of the aims as we now see and think of those aims, or is power there

Dramatizing the Gasoline Tax



A second way in which oil companies can impress upon the public the high tax paid when it buys gasoline is to post conspicuously at service stations a sign stating separately the amount of the tax and the price of the gasoline. This is from a series of 12 suggestions for dramatizing the gasoline tax put forth by the American Petroleum Industries Committee

that will permit government to go way beyond those aims?

The object of the proponents of the bill can be roughly stated as to keep a state with much low cost production from hogging and ruining the market for crude oil produced in other states. We can all agree to that but when it comes to writing a law to carry out that broad aim, that is something else. There are other things in the bill but undoubtedly the power sought to be given to accomplish this aim is the most important feature.

Here are sections covering this:

Determinations of Fact

"Section 6. After fair and impartial consideration of pertinent information submitted by any commission, officer or other agency established under state law for the purpose of conserving oil and gas and preventing the physical waste thereof in any State, the systematic analysis of appropriate statistical data, and consultation with such sources of information within the petroleum industry as it may deem necessary, the Board shall determine periodically, within such limit as is consistent with the prevention of physical waste, the following facts: (1) the reasonable market demand for petroleum in the United States; (2) that part of such demand which constitutes the reasonable market demand for petroleum from each producing state, specifically determining the quantity required from current production to supply such demand from each producing state. The Board shall inform any duly constituted State authority charged under State law with the duty of regulating or restricting the production of petroleum of its said determinations and shall also give public notice of said determinations.

* * *

"Quotas to Protect Interstate Commerce and Prevent Waste When Found Necessary Because of Excess Production

"Section 7. When and only when the production of crude petroleum in any State exceeds the reasonable market demand therefor, as determined under this Act, and the Board after hearing expressly finds that such excess supply or production directly and injuriously affects commerce among the several States or with foreign nations, and causes waste, the Board shall prescribe quotas of crude petroleum for movement in commerce in such manner and to such extent as will limit the movements of petroleum in commerce to the reasonable market demand as determined by the Board, but shall limit its quotas prescribed hereunder to such particular areas or particular sources of supply as it finds necessary in fairly accomplishing the purposes of this Act to balance supply with demand and to prevent waste."

Just what would you do if you were a "new dealer" with large ideas about redistributing the wealth of the country and righting alleged economic wrongs, if you had all this power in this Roosevelt administration?

Here are some primary questions to start with. Just in what way can commerce be "injuriously" affected, under this law and under the broad idealism (so-called) of the Roosevelt administration? Just what is "waste" in such an environment?

We in the oil industry believe that anything which causes crude oil, no matter where it is produced, to be sold at a loss to the producer is "injuring" our commerce in it. We also believe that such injury is a "waste."

But is that what a "new dealer," with all these fine ideas for humanity, would call "waste" and "injury"?

The "new dealer"—and also this Petroleum Administrative Board—is primarily interested in what is best for the general public as he sees it. His thought and interest is to eliminate "waste" for the public.

If somebody happens to be injured in accomplishing that, it is too bad for that somebody but it still is the best for the general public. Such type of "new dealers" have little sympathy for the capitalist and business man, as we all should know by now. The Roosevelt administration is frankly saying that the capitalist should not exist at all and that the business man should be kept going only that money may be had to give to those who are "less fortunate" or are too lazy and incompetent to make an "American standard" of living for themselves.

WHY is it not fair to assume that such a type of "new dealer"-manned board might not decide that "waste" is best eliminated by permitting 50 cent crude oil from one state to supply the entire country and let all other higher cost fields be shut in, that everyone then might enjoy full advantage of the low cost oil?

Certainly there is no "waste" involved in such a program? The oil that is shut in is still in the ground. The owner of the closed well may have to junk that well and drill another at greater cost at some time in the future; but that is his loss, not humanity's in general and it is little compared to the alleged good done, it could be argued.

And what is a court going to do? There is no precise instruction in this proposed statute to guide the court, no definition of "injury" and "waste"? A radically minded court might find little difficulty in accepting the professor's theory.

What is such a board going to do in the case of the state of Michigan, where, this winter, a group of small producers and refiners were able to defeat every effort to have a state conservation law and oil code that would restrict production? These producers want to develop Michigan unhindered save that, at present, they say they will stop when given all of the state's consumption. They think that is their inalienable right because they "save" much transportation to Michigan citizens.

But should Michigan develop a half a million barrels a day of production quickly, will such a socially minded federal board want to confine its production to Michigan markets? Will Michigan's producers be satisfied to stay within the state's borders, when just a few miles away at Whiting and East Chicago is about the world's

biggest refining center, much nearer to Michigan than to any other field? That Michigan's crude is not as good as other crudes is not going to be such a factor when it comes to getting cheaper gasoline to the public, gasoline made from cheaper crude, which does not have to be "wastefully" transported 500 or more miles, crude oil which is right in the borders of the country's biggest market?

Just what do you think a federal board of such high (?) minded "new dealers," in an administration pledged to "planned economy," that has been elected because of its dole to all unemployed, its satisfying old age pensions, its taking of dollars from the business man's pocket and putting them in that of the farmer, its turning the labor situation over to the professional labor unions, and ad infinitum, what is such a board, in such an environment, going to say about Michigan and "waste" and "injury" to the commerce of "wealthy" oil companies, when it is preventing "waste" to the public?

Then there are other matters that the oil industry may call "waste" and "injury" but which this board may consider "savings" and in the best interest of the people as a whole.

Might not such a board so juggle state quotas of crude production as to favor the states and companies using the cheaper pipeline method of transportation as against "wasteful" rail transportation? And may not the board favor states whose crude can be moved by water, both sea and inland, at lower cost to the public than by the comparatively "wasteful" pipeline?

Might not such a board get into the question of what crudes give the greatest, cheapest and best gasoline yield, and what give the biggest lubricating oil yield and then fix quotas accordingly?

Might not such a board rule that Pennsylvania's production should be cut to the extent that it is supplying lubricating oil "wastefully," say west of the Mississippi river, particularly to California, arguing that a satisfactory oil can be made cheaper out of local crudes that do not have to be shipped across the continent?

And what is to hinder the board deciding that the burning of fuel oil, whether by industry or householder, is a "waste," and reducing the production of crude oil accordingly so that all heavy products would have to be cracked into gasoline in order for the refiners to take care of their customers?

To what extent will this board be subjected to resolutions of state legislatures demanding larger quotas for their own state's oil, and backed up by Chambers of Commerce and other local organizations?

To what extent may state authorities get injunctions against this board and its recommendations and even defend its oil producers for overproducing their quota?

May not candidates run for state office, particularly governor, U. S. Senator or member of Congress, on the platform of more market for the state's crude oil? Even though these candidates can not order this board around, if they are elected, they can make speeches and get their story in the newspapers and they can demand and get investigations of this board and perhaps even instructions to this board to do so-and-so.

Then how about the other side of the picture, the interest that the members of the board may have for the gasoline consumer? And how about the interest of the Congressman or Senator from a non-oil producing state? They represent consumers who are only interested in low gasoline prices. Their efforts naturally will be to get more and more oil on the market in order to bring about a lower price. These Congressmen from consumer-only-states will be quite inclined to support the no "waste" policies outlined of a radical and socialistic type of board.

Will not this be a grand opportunity for the non-oil producing farmer blocs, the labor blocs and a lot of other consumer blocs that could and undoubtedly would be quickly and easily formed, to have a regular field day?

And what could the oil industry do about such unjust orders? Just about nothing, outside of spending its time attending congressional hearings and buttonholing congressional members who would be the oil men's real masters, because they would "represent" the consumer.

For the board is authorized to determine the "reasonable market demand" and it is going to do that in the environment of Washington and the administration in power there. It is going to do it under all the political influences that exist in the country.

If we have a board appointed by so-called old fashioned reactionary administration and operating in such an atmosphere, it is conceivable the board would throw the doors wide open to most anything in the way of uses and methods of production and refining; but if such a board is appointed by an ultra-radical president and operates in an administration that is just tearing its shirt to help the common people, it rather stands to reason that the board will decide in the other extreme. "Waste" will be sought for all the way from the well to the consumer and quotas fixed to stop it.

This conjecture may seem idle and nonsensical. But all you have to do to see its possibility, even its probability, is to look into the Roosevelt administration. It is just surging with desire and effort to "correct economic maladjustments" and to take the dollar from him who has it and give 50 cent pieces to two who have not. All you need do is look at Ickes' oil administration, his many times announced desire to take over the oil industry as a public utility and the many efforts of his boards to rule the oil industry by the arbitrary exercise of the power they thought they had.

All you need do is look at the personnel of the administration's boards. For the most part they have been composed of men of many new ideas, hungry for more and more power, and of decidedly socialistic and even communistic leanings. They have not been sympathetic to or regardful of business. They sought to use their power, actual and assumed, to carry out their preconceived ideas. Fortunately, so most of us

believe, they did not have the power they thought they had, but here in this Thomas bill will they not have the vast sweeping power that many of them want and have sought?

If they have that power won't they use it?

It is only human nature the world over and in all history, to use about all the power that one has and to seek diligently for more. Is there any reason to believe that men appointed to this board are going to be different from most others, that they will modestly back away from this absolute power over one of the greatest industries of the world?

If the oil industry wants all this it is evidence that the industry has become more altruistic than any in the world or else it has no conception, even after the experience of the past two years, of all the evils and difficulties of government management of its business.

Perhaps the above picture unduly expands the possibilities under this proposed law; perhaps it is too pessimistic as to the sound judgment of government officials; and perhaps the lawyers can write enough safeguards into this bill to hold it solely to the oil men's idea?

But at all events the industry should look at the whole picture and get well acquainted, if it is not, as to the ways of government in managing business. When we started in writing the code two years ago oil men, who should have known better, went in for government price fixing and a great deal of control. We can thank our lucky stars that government never got started on it because, if it had, it would have been our most disastrous experience of all time. Fixing railroad and public utility rates is one thing where a monopoly is granted by government, but it is entirely different trying to fix prices on the many products of petroleum sold by 350,000 retailers all over the country.

In studying this Thomas bill the oil industry can not only look at the fantastic but entirely possible—in fact highly probable—picture which has been painted, but it can consider the still further possibility that if government should actually have the power to do and does do all these things, how much further government may try to go and how much more power will it seek to get over the oil industry?

At all events, whether one thinks this fantastic or not, let us not rush into, or be rushed into, some possible obnoxious government regulation in the same ignorance we had when we embarked upon the code. We should have known better then, but certainly today, after the bitter experience of the last two years, and with every opportunity to scrutinize in detail the aims and activities of highly socialistically minded administration officials, there is no excuse for our not knowing what we are being asked to accept.

There are other points in the Thomas bill which should be investigated and considered, over and above whether it is constitutional. There is no question but that, if the bill is made law, it will be taken into court at once and kept there until it has been properly tried out before the U. S. Supreme Court.

But as to some other features of the bill.

There is the fact that no qualifications of any kind are set up for membership on the Petroleum Administrative Board. The bill says that its employes shall be trained and skilled in their lines, but the President can put any one he wants to on the board itself. There are to be five members, drawing $9000 each and serving for 6 years. Nothing in the bill calls for their being approved by the Senate.

The board seems to have plenty of authority to go into any oil man's private business anywhere and get all it wants in the way of information and do whatever it wants to with it, publish it to the world if it cares to.

Probably the greedy hand of Ickes put in the proviso that the board shall be "in the Department of the Interior" and that "all orders or determinations shall be reviewed and approved" by the secretary. That would be as if Congress were to put the Interstate Commerce Commission and the Federal Trade Commission under the authority of the Secretary of the Department of Commerce. Congress just now is refusing to put the proposed new National Labor Board in the Department of Labor, although Madam Secretary wants it badly enough.

While under the language of the bill Ex-Oil Administrator Ickes might not be able to write in changes in a ruling of this board, he could keep turning down their rulings until they wrote one satisfactory to him. The chances of a board in a government department bucking publicly at least on its big boss are pretty slim. Ickes would run this board.

But another man might in a practical way have equal power with Ickes. He would be the advisor, whoever he might be, who would check up the board's findings and advise Ickes whether to approve or disapprove. No cabinet officer has the time to go into much detail. They all operate on the advice of associates, so over this board might be some man or men who would act as unofficial chief censor.

If you think you would like this kind of a set up, look again at Ickes' record with the oil industry and the record of some other cabinet officers of history. Cabinet officers are not such an outstanding lot of men. We have had them of all kinds, brilliant and dumb, conservative and radical, able and incompetent, and truth tellers and liars.

This Thomas bill puts the Secretary of the Interior on a parity with the U. S. Circuit Court of Appeals which is the first court according to the bill to which an appeal can be taken from a ruling of the board. The bill does not even deign to notice the U. S. District Courts. Whether the judiciary will protest at having a lot of cases saddled directly on the Circuit Court remains to be seen, but the fact that the district judges are passed up suggests that the drawers of the bill are not concerned about orderly legal procedure.

In fact the Secretary of the Interior would have more power than the Circuit Court of Appeals because it would have to accept without question the statement of facts found by the board, but the secretary could revise the

facts to suit himself, all without hearing by him, though a hearing by the board is provided for.

If you want to rest your business with the tender mercies of the Secretary of the Interior, whether he be a Fall or an Ickes or who, then support the bill as now drawn.

Another feature of the bill that suggests close study is that seeking to give the board approval of voluntary agreements between members of the industry to permit them to "compete on a fair basis" and to "be assured fair access to markets," whatever all that means. Either this seeks to cancel anti-trust law or to take over the functions of the Federal Trade Commission under existing law. If it actually suspends anti-trust law there will be a big uproar in Congress. If this seeks to usurp the functions of the Federal Trade Commission under present law only, then the industry should decide whether the trade commission, as bad as it has been at times in the past, is in a better position to deal out justice than a board personally operated by a cabinet officer.

If the bill passes as drawn and the courts should hold that it supersedes all anti-trust law of the federal government, then we can consider what sweep of power is given the board under this clause and couple that with the power previously given arbitrarily to allot crude oil to states and fields. It would seem from any fair reading of the bill that the board would then have complete control of every activity in the oil business; that every detail of prices and operations would be under its direction; there would seem to be no limit to what the board under the Secretary of the Interior could do.

We realize full well that some mighty able and fair minded and conservative men are supporting the idea of regulation by quotas in commerce by the federal government. Whether they are all for this bill as now drawn or not we do not know. We realize that any such seeming fantastic lengths of government control as here indicated would be hotly fought, at least by nearly all of them. But the fact remains that, regardless of the merit of the main idea and the men supporting it, here are the words. Just what do they say? Just how will they be interpreted and by whom? And how will the development of Roosevelt's humanistic and socialistic ideas for a planned economy affect their application to the oil business?

It is not just a matter of law, as may be decided by a sedate supreme court, but a matter of practical politics played by all sorts of people for all sorts of motives, all of them selfish.

Let the industry open its eyes to this bill now, find out just what it says and what it means and then, if the industry does not like it, let it say so with a mighty voice.

Justice Department Investigating Jobbers' Charges on Margins

WASHINGTON, June 22. THE anti-trust division of the Justice Department is looking into the complaint of the National Oil Marketers Association and is making an investigation to determine if there are any secret agreements among refiners to fix jobber margins, it was learned authoritatively today.

Following the meeting of the N.O.M.A. here June 17, a committee called upon the Attorney General and presented a resolution asking for such investigation.

The resolution said that jobber margins "during and since" the oil code were "drastically reduced to the point where the very existence of the independent jobber is at stake."

Many independent jobbers think, the resolution said, that the fixed price of crude that existed in that period and the gradual increase in the wholesale tank car price of gasoline without a commensurate increase in the retail price indicated the possibilities of such agreements in violation of the anti-trust laws.

The N.O.M.A. committee conferred for two hours June 17 with Assistant Attorney General Stephens, in charge of the anti-trust division, and his associates.

The jobbers said afterwards that they had presented data and related incidents which they thought indicated concerted action among some refiners. They said that they were assured that their complaint would be looked into.

Paul E. Hadlick has announced his resignation as of June 15 as secretary of the Marketing Subcommittee of the Planning and Co-ordination Committee to devote all his time to the N.O.M.A. of which he is secretary. Hadlick did not resign as a member of the marketing subcommittee. Along with E. V. Weber, Cincinnati, president of the association and also a member of the marketing subcommittee, Hadlick was authorized to participate in the committee's revision of the 1931 Federal Trade Commission oil marketing code and the NRA oil code.

Appointment of the committee, authorized at the N. O. M. A. meeting to study the question of disintegration of major oil company operations, was announced today by Secretary Hadlick. The committee will report back with recommendations at the association's next meeting. It consists of:

Wm. Earle White, chairman, Delta Oil Co., Petersburg, Va.; J. Marshall Thompson, General Oil Products, De Soto, Mo.; C. S. Rosenthal, Apex Motor Fuel Co., Chicago; Andrew Riekse, Colonial Oil Co., Grand Rapids, Mich.; and Secretary Hadlick.

The National Oil Marketers Association has taken offices in the National Press Bldg., here.

Continuance Urged of Oil Code Credit Program

PITTSBURGH, June 20.—Plans for a continuation of the oil industry's work in establishing uniform credit practices throughout the country were discussed by the credit representatives of the oil industry at the annual convention of the National Association of Credit Men held here this week.

It was the unanimous opinion of the credit executives, representing oil companies from all sections of the U. S., that a concerted effort should be made to continue the work which was inaugurated by the Committee on Credit Practices of the Planning and Co-ordination Committee.

Oil companies generally were highly satisfied with the workings of the credit section of the petroleum code (Appendix B—maximum credit terms) it was stated, and the consensus of the meeting was that this section should be included in any voluntary code adopted in the future by the oil industry.

An increase in volume of business of approximately $510,000,000 was shown by a group of 17 major oil companies in 1934 over 1933, while at the same time these companies reduced their investment in receivables approximately $17,000,000, those attending the meeting were told. The general belief was that the credit practices as followed under the code had a considerable part in this increased turnover of company money, it was stated.

The figures presented, representing the composite receivables and gross sales of 17 major companies, revealed that the turn over of receivables increased from 8 times in 1933 to 10.1 times in 1934.

The composite figures follow:

Gross sales, 1933	$2,683,011,389
Total receivables, 1933	333,693,254
Turnover of receivables	8 times annually
Gross sales, 1934	3,196,967,767
Total receivables, 1934	316,060,940
Turnover of receivables	10.1 times annually

The Committee on Credit Practices of the P. & C. Committee, which took an active part in the formation and working out of the credit practices of the code is composed of:

M. L. Gosney, Sinclair Refining Co., New York, chairman; Fred H. Bowman, Pure Oil Co., Chicago; R. E. Clarke, Standard Oil Co. (Indiana), Chicago; R. R. Cox, Kanotex Refining Co., Arkansas City, Kansas; L. P. Craig, Deep Rock Oil Corp., Chicago; H. E. Hartline, Standard Oil Co (California), San Francisco; C. R. Lincoln, Hartol Products Corp., New York; L. C. Lyon, Gulf Refining Co., Pittsburgh; Jack Nourse, Nourse Oil Co., Kansas City, Missouri; and W. M. Watson, Socony Vacuum Oil Co., New York.

Strong Backing Needed To Pass Thomas Bill

By Teletype

WASHINGTON, June 25.—A fresh rumor was floating around Capitol Hill today that the President will have "something to say on oil very shortly." This report has been variously interpreted—depending on whose ears it reached.

Thomas bill supporters hope that there will be a special message urging enactment of an oil legislative program, the description of which will fit their bill, even though it does not specifically endorse it.

Others think that, if a communication to Congress does come from the President, it will outline only general objectives of oil legislation. They are of the group which believes that legislation approving the interstate compact, establishing a fact-finding agency, providing for limitation of imports and making permanent the Connally "hot" oil law, would meet the wishes of the President.

Senator Thomas, of Oklahoma, has said that it was up to the administration to push the bill through. In the House, Congressman Disney, Tulsa, is still undecided whether he will sponsor a companion bill. He has stated repeatedly that he will not, unless assured by the White House that the administration will go down the line to get it passed.

The Thomas bill came up on the Senate unanimous-consent calendar June 23, but Senator Huey Long, of Louisiana, objected to its consideration. It is apparent now that the bill will reach the floor for a vote only through regular procedure, that is, for a majority vote to take it up.

Senator Connally, of Texas, is reported to have ready for introduction a bill approving the Interstate oil compact. But with the Senate seemingly not over-anxious to take up the Thomas bill, which has some administration support at least, there doesn't seem much chance now of a compact bill getting by.

The move probably will be to wait and see if the Thomas bill gets by the Senate (and that seems not improbable, if it is ever taken up) and then attempt to amend it in committee on the House side so as to take out all but the compact-approval provisions.

Kentucky Jobbers Oppose Thomas Oil Bill

LOUISVILLE, Ky., June 22.—The Jobbers Division Executive Committee of the Kentucky Petroleum Marketers Association, meeting in Louisville June 22, unanimously endorsed all the actions taken by the National Oil Marketers Associaciation in Washington June 17.

The actions endorsed included the resolution opposing enactment of the Thomas bill or any substitute thereof; the resolution opposing any further suspension of the anti-trust laws; the resolution that the association participate in the formation of a code of fair practices under the Federal Trade Commission; and the resolution urging that the Department of Justice conduct an investigation to ascertain whether or not agreements between suppliers now exist that are in violation of the anti-trust laws.

G. Dudley Givens, Jr., chairman of the committee stated that 17 Kentucky jobbers are now members of National Oil Marketers Association and that several others have indicated their intention of joining in the near future.

Ickes Continues Oil Agencies Under the Amended NIRA

By A. M. Petty
N. P. N. Staff Writer

WASHINGTON, June 22

SECRETARY Ickes has asked the Planning and Co-ordination Committee to continue as an advisory agency under the amended NIRA. If it declines then another committee will be appointed from the industry, said Ickes in a letter to Chairman Collett dated June 19.

The letter said that Ickes would continue as administrator for the oil industry to carry out provisions of the recovery act in its amended form. To aid him, Ickes said he is continuing the Petroleum Administrative Board and the Petroleum Labor Policy Board.

But he did not mention the oil enforcement section of Louis Glavis' investigation division.

What will be the duties of the P. & C. Committee, the PAB or the PLPB, was not disclosed. Indeed, the purposes of the codeless NIRA are vague as extended to April 1, 1936.

To some observers, it appeared that Ickes was continuing the PAB and PLPB in the hope that Congress will enact additional legislation for them to administer.

There is no oil code to enforce, and little prospect of voluntary agreements being submitted by the oil industry under the abbreviated NIRA. Hopes of some oil men that, by means of these agreements, refinery control and stabilization work under the code might be continued, were dashed by the Borah amendment to the NIRA tacked on in the Senate.

It is difficult to say where the oil industry now stands, much less where it is going, under the bob-tailed NIRA. But let's take a look at what has occurred since May 27 the Day of Reckoning.

Sec. 3 of NIRA providing for the making and approving of codes and fixing penalties for violations is dead—killed by the supreme court's decision in the Schechter case. Since the court ruled that Congress could not delegate such unlimited power to the President, all codes, including the oil code, were invalid from the beginning.

Then came the Borah amendment to the extension resolution which greatly restricts the kind of voluntary agreements which can be approved under the amended NIRA.

However, there are still quite a few pin feathers left, but no one this side of the supreme court can say definitely just what is the effect of the tattered provisions remaining in the recovery act.

THERE is still apparent authority for the President to make any "necessary" rules and regulations and enforce them with a $500 fine and six months' imprisonment.

Two subsections of Sec. 9 empowering the President to institute proceedings to regulate rates and bring about divorcement of oil pipelines are apparently untouched by the court's decision or the extension resolution.

There is also—but let's take it up in order.

As the President remarked shortly after the decision, the court's ruling that the code-making provision was an unconstitutional delegation of power, was not insurmountable. A new law could probably correct that defect. But the portion of the ruling which implied that the federal government could not regulate purely intrastate transactions so limited the scope of the codes as to make them practically futile.

The President summarized his plans June 4, after canvassing the effect of the decision, as follows:

No effort would be made to revive the codes.

A skeletonized National Recovery Administration would be continued to study effect of abandonment of the codes and complete research work underway.

To set an example for industry, the government would require all persons awarded contracts, which would be paid for out of federal funds, to observe minimum wages and maximum hours and not use child labor in the production and supplying of materials. Such wages and hours would be substantially the same as standards under the old codes, the President said.

As regards the Petroleum Administrative Board, the President said that its continuance depended upon what kind of general oil legislation is enacted.

The mediation and conciliation activities of the Petroleum Labor Policy Board would be turned over to the Labor Department. He indicated that the PLPB would be designated to administer the Wagner labor disputes bill over the oil industry, if Congress passed it.

Now let's see how much of this has been accomplished.

Code enforcement has ceased. All pending suits, including more than a hundred oil cases, have been dropped.

Congress passed, and the President signed June 14, the following resolution, extending the NIRA in emasculated form.

"*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled*, That Sec. 2(c) of Title I of the National Industrial Recovery Act is amended by striking out 'at the expiration of two years after the date of enactment of this Act' and inserting in lieu thereof 'on April 1, 1936.'

"Sec. 2. All provisions of Title I of such Act delegating power to the President to approve or prescribe codes of fair competition and providing for the enforcement of such codes are hereby repealed: *Provided*, That the exemption provided in Sec. 5 of such title shall extend only to agreements and action thereunder

(1) putting into effect the requirements of Sec. 7 (a), in-

cluding minimum wages, maximum hours, and prohibition of child labor; and

(2) prohibiting unfair competitive practices which offend against existing law, including the anti-trust laws, or which constitute unfair methods of competition under the Federal Trade Commission act, as amended."

Under authority of this resolution, the President issued June 15 an executive order continuing the life of agencies set up under the NIRA.

The PAB, PLPB and oil enforcement unit under Glavis were set up by Ickes acting under the executive order designating him administrator of the oil code under NIRA. In his letter to Collett, Ickes said he was continuing the PAB and PLPB but did not mention Glavis' unit.

So, while the President said that the life of PAB depended on Congress enacting some oil legislation, Ickes has chosen to continue the board under authority of the extended NIRA.

Congress has passed the Wagner bill aimed at outlawing the comany-union and encouraging organization of employes for collective bargaining. But the President has not again indicated that he intends to designate the PLPB to administer it over the oil industry.

Funds of the PAB and PLPB, as well as Glavis's oil unit, expire June 30. There has been an indication that the PAB and PLPB, at least, will receive an allotment from the five-billion works-relief fund. During the early days of NRA, the administrative agencies were financed by allotments from the public works fund.

Senator Walsh, Mass., has introduced a bill (S. 3055) giving the President the power to fix labor standards in connection with government contracts. Hearings have been held, but the bill has not yet been reported.

Objection has been made that the bill "runs squarely afoul" the supreme court's NIRA decision and represents a "delegation of blanket authority to the President to determine in every instance what minimum wages and what maximum hours the contractors should be required to observe."

Provisions of this bill apply also to states, municipalities and individuals receiving loans or grants from federal funds.

The Treasury Procurement Division has requested all government purchasing agencies to insert in their bids the requirement that the contract be subject to whatever labor standards the President may be authorized to specify.

Oil companies receiving gasoline and fuel oil contracts for the July-September quarter are being asked to accept a similar provision in their contracts. So far, all have agreed, it is said.

Just who would administer the proposed Walsh law has not been disclosed. However, the President several weeks ago indicated that this would be left to the NRA. As regards oil companies, however, it may be turned over to the PAB.

REPRESENTATIVES of the NRA and Federal Trade Commission are meeting together to work out plans for considering voluntary agreements that may be submitted under the extended NIRA, but have reached no conclusions. Whether this set-up or the PAB would handle agreements submitted from the oil industry, is not known.

Originally, Sec. 4-A of NIRA authorized the President to enter into agreements with and approve voluntary agreements among members of an industry. The only "finding" required was that such agreements effectuated the policies of the Recovery act and did not promote monopoly or oppress small enterprise.

When such agreements had been approved, then any action in compliance therewith was exempt from the anti-trust laws (Section 5 of NIRA).

Under Sec. 4-A, the Pacific Coast Petroleum Agency with its refining and marketing agreements was formulated and approved.

The Supreme Court decision was not regarded as affecting Sec. 4-A or Sec. 5. However, many believe that Sec. 2 of the NIRA extension resolution (quoted above), which was tacked on at the insistence of Senator Borah, would prevent the formulation of any such agreements.

Effective voluntary agreements under the "emasculated" Sec. 4-A, according to some oil men, will not be possible "and even if there were they would not be worth the price."

The "price," they say, would be the inclusion of Sec. 7-A (collective bargaining) in all such agreements. Many still have in mind the "boycott" tactics attempted by Ickes in the closing days of the oil code to force union recognition on certain companies.

"The amended NIRA," said one oil man, "permits us to agree not to do what is already prohibited by law—that's ridiculous."

Besides the restricted Sec. 4-A and 5, there are other almost-forgotten provisions still intact in the amended NIRA. Under the heading "Oil Regulation," there is:

"Sec. 9 (a) The President is further authorized to initiate before the Interstate Commerce Commission proceedings necessary to prescribe regulations to control the operations of oil pipelines and to fix reasonable, compensatory rates for the transportation of petroleum and its products by pipelines, and the Interstate Commerce Commission shall grant preference to the hearing and determinations of such cases.

"(b) The President is authorized to institute proceedings to divorce from any holding company any pipeline company controlled by such holding company which pipeline company by unfair practices or by exorbitant rates in the transportation of petroleum or its products tends to create a monopoly."

The famous Sec. 9-C, prohibiting the shipment of "hot" oil interstate commerce, is missing. It was knocked out by the Supreme Court in the Panama-Amazon decision last January.

However, the Connally "hot" oil law, under which the Federal Tender Board in East Texas is now operating, was enacted to take the place of Sec. 9-C. This law is entirely separate from the NIRA.

Sec. 4-B of NIRA, authorizing the President to license any trade or industry to enforce a

code, expired a year ago, on June 16, 1934, by its own terms.

While the rest of Sec. 3 (code-making and enforcement) is out, both by terms of the extension resolution as well as the Court's decision, Sec. 3 (e) probably still remains.

This sub-section authorizes the President to limit imports of any article or articles when the U. S. Tariff Commission on investigation finds that such imports are in substantial quantities or in increasing ratio to domestic production as to "render ineffective or seriously to endanger the maintenance of any code or agreement under this title."

That leaves Sections 1, 2, 6, 7, 8 and 10 unaccounted for.

Sec. 1 is the declaration of policy while Sec. 2 authorizes the President to set up and utilize government agencies.

Sec. 6-A and 6-B require that any trade association in order to be eligible to receive benefits of the act, must supply the President with any information relating to its activities that he shall prescribe; also, that the President is authorized to prescribe rules and regulations designed to make such organizations truly representative of the industry.

Another provision left intact is Sec. 6-C stating that the President may request the Federal Trade Commission to make such investigations "as may be necessary to enable the President to carry out the provisions of this title." In such investigations, the commission would have all the powers with respect to investigations under the FTC. Act, which includes the power to compel testimony with heavy penalties for refusal to testify.

It was under Sec. 6-C that Ad- investigate and report on lease Administrator Ickes requested the Federal Trade Commission to investigate and report on lease and agency methods of marketing in the industry.

Sec. 7-A, requiring provisions for collective bargaining, minimum wages, maximum hours and prohibition of child labor in all codes, is retained but without the codes it is ineffective.

The Supreme Court probably killed Secs. 7-B and 7-C relating to agreements between employer and employes on labor standards and the giving to such agreements the same legal force as the codes, and the President's power to fix wages and hours.

Sec. 7-D merely defines the word "person" as used in the Act. It is still effective. Sec. 8 refers to the Agricultural Adjustment Act.

A nice question arises about Sec. 10-A. It authorizes the President to prescribe "such rules and regulations as may be necessary to carry out the purposes of this title." It further provides that "any violation of any such rule or regulation shall be punishable by fine of not to exceed $500, or imprisonment for not to exceed six months, or both."

Is this penalty section still in the amended NIRA? It would seem so.

THIS provision gives the President general powers to make regulations and provides the penalties for violations, not of the codes, but of these rules and regulations.

The extension resolution merely repeals provisions for enforcement of the codes. Thus, Sec. 3-F, providing penalties for violating the codes is out, but it would seem that Section 10-A is still in.

Sec. 10-B authorizes the President to cancel or modify any "order, approval, license, rule, or regulation issued under this title" and provides that every agreement shall contain a provision to this effect. It remains in the amended law.

Daily Average Production, Important Districts, American Petroleum Institute Figures

	Week Ended June 22	Week Ended June 15
	Barrels	Barrels
Okla. City	149,150	168,700
Total Okla.	517,000	532,200
East Texas	463,400	460,300
Total Texas	1,058,200	1,046,050
California	581,000	575,200
East of Rockies	2,747,300	2,148,850
Total U. S.	2,728,300	2,724,050
Crude Imports	140,290	79,860
Total New Supply	2,868,590	2,803,910

Status of the Nuisance Taxes in Confusion

WASHINGTON, June 25.—President Roosevelt's insistence that his proposal for higher inheritance and corporation taxes be acted on at this session has thrown up in the air the extension of the nuisance taxes, including levies on gasoline, lubricating oil and oil transported by pipelines.

Chairman Harrison of the Senate finance committee proposed that these taxes be tacked on the "nuisance tax" resolution. This was met with threats of filibuster.

The upshot of it may be that the tax bill may be held up and the nuisance taxes expire June 30. To meet this, some leaders are proposing that a separate resolution be adopted extending the nuisance taxes for 30 or 90 days, thus allowing them to consider the President's tax program more leisurely.

No Further Price Fixing Order in Wisconsin

MADISON, June 25.—The oil industry's first and only experience with governmental control of retail prices expires June 30, with the current Wisconsin Markets Department's minimum price order, and no further order is to be written.

A committee of seven, representing various types of marketers, meeting last week with markets department officials at Madison were told by R. M. Orchard, department counsel, that, on account of recent court decision on the oil code, he could not recommend to commissioners that another order with price provisions be issued.

The only change anticipated in marketing practices in this state at the end of the order next week is to return dealer margins to the same status as in the rest of the middle west. This will reduce the margin on third-grade gasoline 1 cent, to 2.5 cents. Under the price order, the minimum dealer margin is 3.5 cents on all grades. The rest of the middle west is on a schedule of 2.5 cents on third-grade, 3.5 cents on premium and regular.

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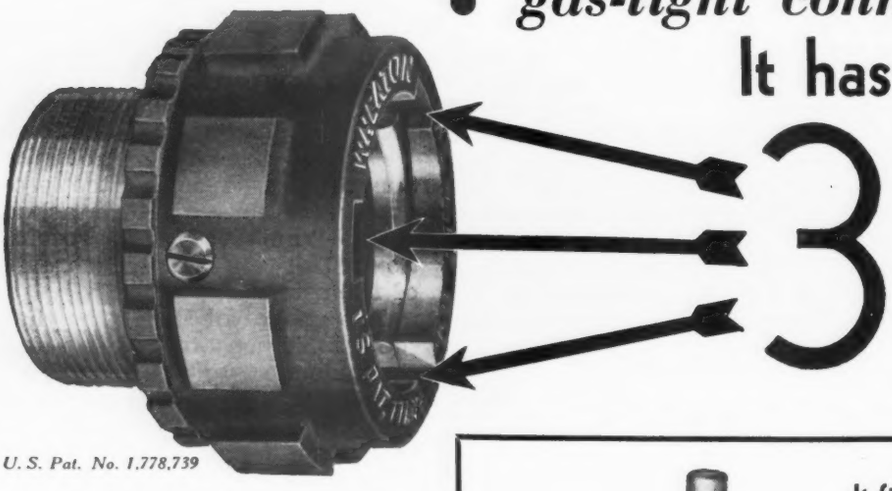

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Type 34 Quick Hose Coupling

THE Wheaton Type 34 Quick Hose Coupling has *three slots*, instead of two—and that *additional slot* is what puts this new coupling far in advance of all others. It gives you the *tightest* connections ever known—and perfectly *gas-tight* connections, too.

To connect the hose, you just slip the three slots of the coupling over the three lugs of the adapter (attached to the faucet), and give the coupling a part turn. This can be done with the hands, it fits so tightly and turns so easily. A wrench, however, can be supplied for emergencies.

Give your delivery system the last word in quick hose couplings—a coupling that makes deliveries easier, quicker and safer. Install the new Wheaton Type 34, and start every delivery with a hose connection that is perfectly *tight* and perfectly *gas-tight*.

Remember, Type 34 fits all Wheaton Faucets, and is made in 1½″, 2″, 2½″ and 3″ sizes. The 1½″ and 2″ couplings do not require a wrench. Send for a sample now and give it your own test—on the Wheaton money-back guarantee.

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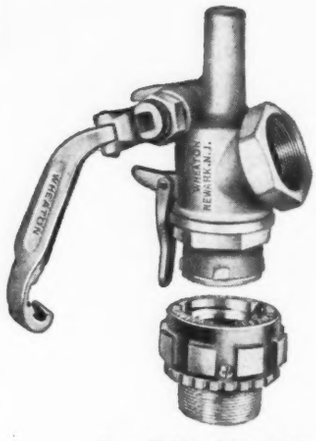

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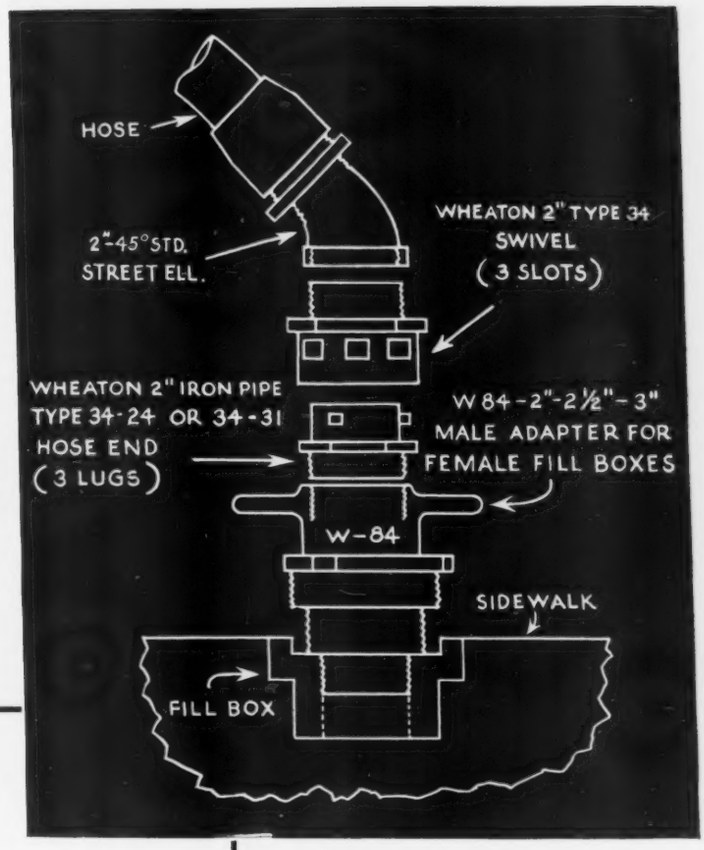
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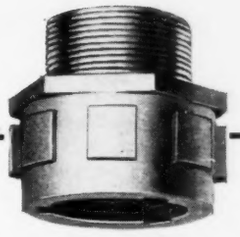

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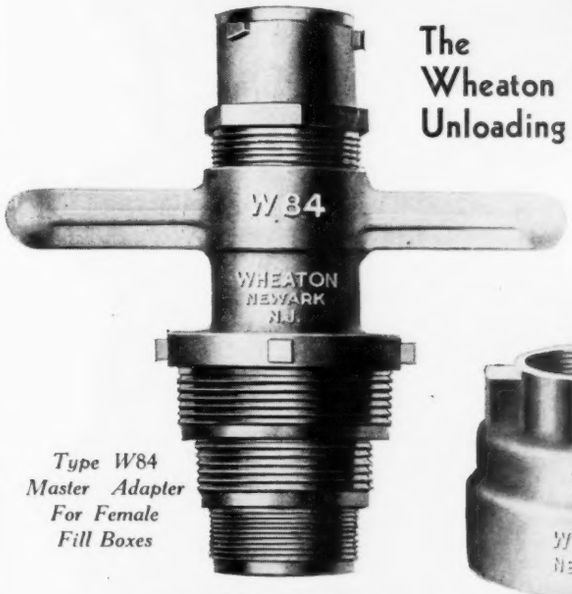

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Crude Oil Production in California 70,000 Bbls. Over Allowable

By Jack Westsmith
N. P. N. Staff Writer

LOS ANGELES, June 22 RAPIDLY mounting crude production, threatening to get entirely out of hand, presented last week the greatest danger to the stability of Pacific Coast petroleum markets.

In immediate importance, this development overshadowed the crisis caused by the failure of California marketing companies to find any substitute for the agreements sponsored by the Pacific Coast Petroleum Agency.

Excess crude production has steadily grown for the past ten days to a peak of nearly 70,000 barrels daily above the state's June voluntary curtailment quota of 512,700 barrels daily.

Many fields which, in the past, have held strictly to their allowables, or have even had considerable underage, are now disregarding all proration schedules. Kettleman Hills North Dome, which has shown better than 100 per cent compliance with both voluntary and code curtailment schedules for the past five years, increased its daily production from 52,922 barrels in April to 60,143 barrels in the early part of June, and to 74,348 barrels on June 17. Its allotment in April was 62,465 barrels daily and in June 59,700 barrels daily.

Playa del Rey was an example of fields that greatly increased their output without the excuse of previous under production. In April this field had an allotment of 9969 barrels daily and average production of 11,045 barrels daily. In June its allotment had been increased to 14,500 barrels daily, but its actual production mounted to an average of 21,599 barrels daily in the early part of June and to 24,663 barrels on June 17.

The general production situation became so critical that, on June 19, some crude oil purchasing companies announced the cancellation of current contracts and others notified producers that, if overproduction continued at the present rate, drastic reductions would be made in posted crude oil prices. Producers were warned that excess crude would be bought only at prices that would justify payment of storage charges over a long period.

Following this ultimatum, concentrated efforts were made to secure united action by all branches of the industry. Conferences between representatives of producers, crude purchasing companies, refiners and marketers were in almost continuous session throughout the week. Although no definite line of action was agreed upon, the probability appeared to be that any plan adopted would seek to overthrow the burden of excess production upon the fields that overproduced. Refinery demand was expected to be a governing factor in allocations and only as a last resort would a general cut be made in crude prices, it was believed.

In the meantime, drafts of new marketing agreements to take the place of those sponsored by the Pacific Coast Petroleum Agency were reported ready for submission to Attorney General Cummings, as well as to Federal Judge St. Sure, at San Francisco, who issued the 1931 injunction restraining major oil companies from alleged monopolistic practices. Under the direction of Charles B. Garretson, who succeeded W. C. Van Fleet as manager of the agency, a skeleton office force has been maintained at that organization's headquarters here, so that immediate steps could be taken to function under any legally acceptable marketing agreement.

Notwithstanding the feeling of uncertainty that pervaded the market some improvement took place in wholesale and retail gasoline prices in the San Joaquin and Sacramento valleys and the week closed with the prospect that all major companies would advance quotations on third-grade brands in that area to the level in effect before the recent break.

In the Los Angeles Basin area, attempts were made by groups of independent service station operators to advance retail prices of competitive brands to 12.5 cents a gallon, inclusive of 4 cents tax. The effort, however, failed and the net result was an actual decline in retail prices of these products, the new range of prices being from 8.9 to 11.5 cents a gallon.

No changes were made in posted prices of major company products in the Basin area. At company-owned service stations, third-grade brands were retailed at 13.5 cents a gallon, standard brands at 14.5 cents, and Ethyl at 16.5 cents.

150 Glavis 'Detectives' Laid Off By Ickes

By Teletype

WASHINGTON, June 25.—One hundred fifty agents of Louis Glavis' oil enforcement unit have been laid off, it was disclosed today by Administrator Ickes. He did not know how many remained, but Glavis testified last September that he had a staff of 230 in his division of investigation of the Interior Department. Ickes said that those remaining would enforce the Connally "hot" oil law.

At the same time it was disclosed that the Petroleum Administrative Board has been granted an allotment of $80,000 from the Public Works fund. Chairman Fahy said this would carry the board for about two months and that some of this would be allotted to the Petroleum Labor Policy Board.

J. Howard Marshall has resigned as a member of the PAB to enter private law practice, it was learned today. It is understood he will be retained by a group of West Coast oil companies to aid in the formulation of voluntary agreements.

Wagner Bill Opposed at Meeting Of Penna. Grade Association

STATE COLLEGE, Pa., June 21

By John W. Thompson
N. P. N. Staff Writer

ON THE grounds that "it is plainly not in the public interest but in the interest of certain classes of citizens," the Wagner labor disputes bill in Congress (S.1958) was opposed by 250 refiners, marketers, and producers in a resolution approved at the twelfth annual meeting of the Pennsylvania Grade Crude Oil Association here today.

The resolution also stated that there have been serious doubts raised as to the constitutionality of the bill's more important provisions, and that the act permits certain groups to exercise a free hand in the formation and exploitation of certain types of labor organizations, while employers are barred from encouraging their employes to join any other types of organizations.

The resolution came at the end of a two-day session, at which Fayette B. Dow, vice president and general counsel of the association stated; The "Wagner bill drives greater spearheads into the Constitution than did Sec. 7-A of the NRA code."

In commenting on the extention of the NRA in skeleton form, Mr. Dow said that business competition now will not be governed by the NRA, but will have for its guardians the Federal Trade Commission on one side and the anti-trust laws on the other.

Also as a result of action taken here today, Chairman Jesse M. Jones of the Reconstruction Finance Corp. will receive a letter from the association urging the RFC to recall its ruling which prevents the consideration of applications for loans by oil refiners. This ruling was decided upon because of the belief that such loans do not create sufficient employment. The letter will urge that this rule be lifted and that applications be considered on a basis of merit and without any arbitrary restriction against the petroleum refining industry.

Genuine and prolonged ap-

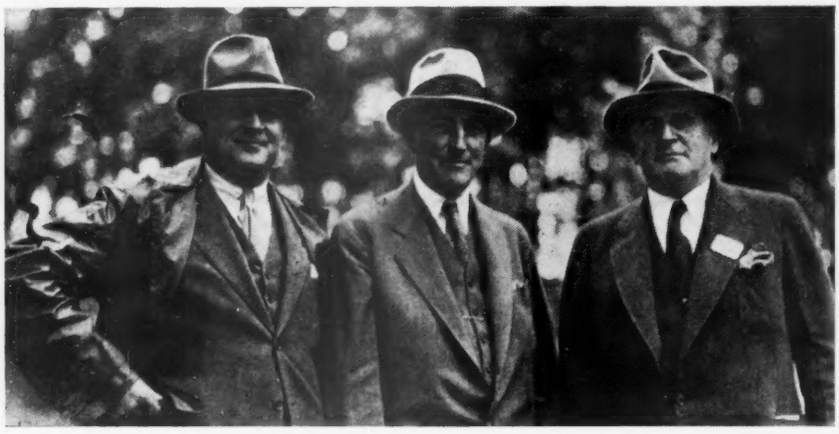
No annual meeting of the Pennsylvania Grade Crude Oil Association would be quite complete without Daniel J. Sweeney, of the Le Suer Oil Corp., Buffalo, as master of ceremonies

plause was given Kenneth C. Baker, of the J. D. Streett & Co., Inc., St. Louis, at the completion of his paper on "Solving The Jobber's Problems." Mr. Baker, whose paper is treated in more detail on page 24-C in this issue, spoke of the damaging reaction to the market when a man who purchases his supply in small quantities can buy at as low a price as the man who buys in large quantities. He is a member of a committee which has made a survey of the jobber situation over the entire country. This committee, he stated, "deplores the unfortunate practice of broadcasting the lowest going tank-car prices by circular letters to anyone who may be listed as an 'oil company' regardless of whether they could handle a tank-car of oil if they were made a present of it." As a solution he recommended that a list be made of those who are truly tank car quantity buyers and who are legitimate prospects and to keep strictly to that list in doing business on tank car prices. Such a method, he believes, would eliminate to a great extent the chiseler.

Mr. Baker also urged that the association emblem again be brought into more prominent use to ward off "the all-consuming sales activities of competitors in the middle west."

President T. P. Thompson, Jr., in his opening address, "The Past Year," issued a warn-

Three pillars of the Pennsylvania region: E. C. Breene, a director of the Association since its inception; Charles L. Suhr, also a director, and chairman of the board of the Pennzoil Co.; Joe E. Moorhead, executive secretary of the Association



D. P. Clark, of the Gulf Refining Co.; E. M. Lyons, of Philadelphia and Fayette B. Dow, vice president and general counsel of the Association, of Washington

ing that "there can be no prosperity for us unless we hold back our output in accordance with sensible and systematic requirements from our markets." He explained the complex situation of the Pennsylvania producer where over-production on the one hand results in a beating down of the market price and a reduction in the price of crude, and where under-production on the other hand means that the logical markets for refined products cannot be supplied, with the result that certain markets are lost and crude prices are cut due to a diminished demand. He said another cut in crude price is inevitable now unless there is an immediate and drastic restriction in refinery runs.

C. R. Wagner, chief chemist of the Pure Oil Co. delivered a paper dealing with "What the Research Program Has Meant to the Pennsylvania Oil Industry." His paper, which was reviewed in detail in the June 19 issue of NATIONAL PETROLEUM NEWS, stressed the extent to which research at State College has helped the Pennsylvania refiner and pointed out that the future economic health of the Pennsylvania petroleum industry is in the hands of this research program.

Among the developments that have come out of the State College petroleum laboratory, he mentioned that "marked headway had been made in the development of a suitable solvent extraction process including a solvent for Pennsylvania oils." He also brought out the point that a practicable solution of the bright stock problem has been indicated which will require the use of no expensive equipment.

Prof. H. A. Everett, head of the mechanical engineering department of Pennsylvania State College, delivered a paper on the subject of "The Great Unknown In Lubricating Oil,"

Robert S. King, new president of the Pennzoil Co., was on hand renewing old acquaintances and making new ones

which was reviewed in detail in NATIONAL PETROLEUM NEWS, June 19 issue. His discussion dealt with the tests which have been made in his mechanical engineering laboratory, using oils of various grades and refining processes in typical gasoline engines, and comparing the results with those obtained when Pennsylvania oil was used in these engines.

In his paper, "Hopes for the Future and Facts for the Present," Dr. M. R. Fenske, director of research of the petroleum refining laboratory at State College, surveyed developments and changes in refining operations of the last five years as a basis for better understanding of possible future developments. He spoke of the possibility of the Pennsylvania refiner finding an outlet for his gasoline by transforming a part of it into solvents.

Turning to Pennsylvania Grade lubricants, he stated that competitors are doing everything possible to make a Pennsylvania type oil, and pointed out that solvent extraction is the newest and most promising method for doing this. He then warned refiners of the "monuments" which have been built in the past, in the form of equipment which became obsolete because of a newer method of operation. "Such is now happening in solvent extraction," stated Dr. Fenske, "even though it is decidedly new. At the start the plants consisted of a series of mixers and settlers; now there is rapid exploitation and the use of towers. And there are many reasons to believe this is not the end, but probably only the beginning.

While the Pennsylvania refiner has a more exact and greater detailed knowledge of the application of solvent extraction to Pennsylvania grade crude than does any other refiner, Dr. Fenske pointed out that there are a great many things he does not know, which are important to him and to the profitable operation of his unit. "The problem of overdesign of solvent refining capacity and its consequences cannot be passed over lightly,' said Dr. Fenske.

He continued by stating that the Pennsylvania refiner "can well afford to develop his heavier oils, to furnish premium oils for all sorts of heavy duty engines, and that there are far more practical possibilities in his bright stocks than in other residual stocks, and that these premium heavy oils should be his business.

Dr. D. S. Cryder, in charge of the chemical engineering department at State College, spoke on "A Bigger Future For Pennsylvania Petroleum," stressing the importance it has in modern petroleum refining. "According to an authentic report," stated Dr. Cryder, "one-

fifth of the total students graduating in chemical engineering are being employed in the petroleum industry."

Two papers on production were delivered. The first, "Production Research vs. Field Engineering," was given by Dr. Gerald Hassler, of the department of petroleum and natural gas engineering; the second by C. B. McClintock, on the subject, "Practical Production Problems." Dr. Hassler stated, "gasoline made from coal is now competing in Europe with gasoline made from European crude at a price of 11.2 cents per gallon and with a 14-cent tariff protection."

Due to vacancies made by retirement, four directors of the Pennsylvania Grade Crude Oil Association were elected: Paul Zook, Bradford; Parker Melvin, Bradford; Carl Daugherty, Butler; and S. M. Vokel, Pittsburgh. A special meeting of the directors has been called for June 28, in Oil City, to elect the president for the coming year.

On behalf of the association, Charles L. Suhr, of the Pennzoil Co., presented a certificate of appreciation to T. O. Grisell for his services during the two-year period in which he served as secretary of the association. The certificate was signed by the officers and directors of the association. Mr. Grisell resigned last summer to become sales manager for Kendall Refining Co. of Bradford. He was succeeded by J. E. Moorhead, the present secretary.

Dr. Cary R. Wagner, chief chemist of the Pure Oil Co., had a busy time at the State College meeting, presenting a paper, and arising at 5 a.m. to play golf

One of the many post-mortem discussion huddles which followed each session. The three are H. D. Hubbs and H. W. Schmidt, of the United Refining Co., Warren, Pa., and L. D. Fulton, head of refinery operations of the Pennzoil Co., at Oil City

Normal Wholesale "Lube" Oil Markets Are Claimed Best for Marketers

STATE COLLEGE, Pa., June 20 THE harmful effect, upon the marketer's business, of wide fluctuations in the refinery or wholesale market for Pennsylvania bright stocks was discussed by Kenneth C. Baker, general manager of J. D. Street & Co., St. Louis, at the meeting here of the Pennsylvania Grade Crude Oil Association.

Referring to fluctuations in the market in 1934, Mr. Baker said the situation was as unsatisfactory to the marketer as to the refiner, especially for the marketer not having sufficient storage to tide him over from one distress period to another. He said the unstable costs resulting from this situation had led many marketers to refrain from featuring the sale of Pennsylvania oils. They had found, he said, that this business was likely to be taken away from them during periods of both extreme highs and lows in the market.

At the high points of a widely fluctuating market for bright stocks, the marketer would find, Mr. Baker pointed out, that, even by reducing handling charges, his selling prices were increased to a point so near those for the nationally advertised Pennsylvania oils, that many of his accounts would turn to the nationally advertised oils.

"With the market at extreme lows," he said, "we jobbers were faced with the alternative of reducing our prices and taking a loss on our inventories, or holding our prices based on cost of material on hand and letting those fortunate enough to have low cost oils on hand take away our accounts."

He also pointed to the bargain sale two-gallon can and the corner lot "two-for-a-quarter gypper" as being brought into business by the low markets.

Mr. Baker told the refiners present that, if they could devise some means for establishing reasonably profitable prices for bright stocks and then permit only normal fluctuations in their prices, the marketers over the country would have much greater confidence in taking on future business in Pennsylvania oils.

For the protection of the marketer's business, he told the refiners that quantity discounts should be established based on the volume of material taken.

"When a man who purchases 6000 gallons of Pennsylvania oil annually can buy at as low a price as a man who buys 500,000 gallons, something should be done about it and we think that quantity discounts, properly applied when earned, is the remedy," Mr. Baker told the refiners.

He further advocated, as a

benefit to both refiners and marketers, a study of the costs of packaging oil as a means to prevent low price sales below cost. "We believe that a sorely needed study of costs of packaging will furnish data that will open the eyes of even the most case hardened low price seller," he stated.

"As matters stand today many refiners are soliciting the small five and ten-drum buyer, directly in the territory in which their tank car customers are operating, at tank car prices plus the cost of used drums. The small drum buyer is not entitled to tank car prices, for very often he is the source of ridiculously low retail prices for Pennsylvania oils. Naturally, the tank car buyer cannot meet this competition and very naturally he resents his source of supply creating this type of competition."

Neither can the refiner afford to sell on this basis, he brought out, adding that a careful audit of packaging costs would prove this statement.

Mr. Baker said the refiners of Pennsylvania oils were hurting their own and the marketer's business for these products by selling non-viscous neutrals to sources which were blending these neutrals into motor oils and selling the product as "Guaranteed 100% Pure Pennsylvania Oils."

"We all know that non-viscous neutral is not a motor lubricant," he stated. "Any motorist who buys motor oil which contains it has been defrauded. If such a fraud is committed in the name of Pennsylvania olis he is certain to remember it and it will undermine his opinion of the superiority of Pennsylvania oils."

For another point, Mr. Baker advised the refiners to refrain from broadcasting the lowest going tank car prices by circular letters to others than truely tank car buyers which were the refiner's legitimate prospects. He suggested the collective compilation of a list of legitimate tank car buyers.

The last point he brought before the refiners was to urge that the Pennsylvania Grade Crude Oil Association emblem be again featured by the refiner members of the association in their advertising and display of their motor oils. He pointed out that the conditions which had led the refiners to play down, or discontinue entirely, the use of the association emblem had been largely done away with and that the marketers felt that the advertising of the association should now prominently feature the emblem as the hallmark of quality for lubricating oils.

In concluding, Mr. Baker predicted a return of the market for premium quality oils. He said business was definitely better in his part of the country and that the farmers had more cash than for several years. He said crop conditions were excellent.

"Collections are good," he said, "and motor car, truck and tractor sales show that people are again buying equipment in which they can take pride."

Nebr. Marketers To Carry On Stabilization Program

LINCOLN, June 21

NEBRASKA marketers approved continuation of market stabilization and are seeking means of financing such work for the future. This action was taken at a meeting of marketers here June 21, called by the Nebraska Petroleum Marketers, Inc.

Two resolutions were adopted, formulating an association policy and authorizing an investigation of a plan to raise funds through an assessment by suppliers on gasoline inshipments.

O. D. Corey, association president, presided and summarized the present condition of Nebraska marketers, predicting that there undoubtedly will be some kind of general oil marketing code. He stated the purpose of the meeting was to ascertain sentiment of Nebraska marketers on how to proceed to be sure their interests were represented in the work of formulating a code.

Since the end of the code there has been no sign of catastrophy yet, he continued, the industry is beginning to take heart and independents now have the opportunity to do what they have wanted to do—place profits ahead of volume.

Austin Sutherland, C. M. Sutherland & Sons, Lincoln, then explained the new intrastate freight rates. H. H. Hahn, secretary of the former code and stabilization committees, spoke of the financial condition of stabilization work and suggested a plan to assess a charge of 10 cents per 1000 gallons of gasoline, through the source of supply, to equalize payments for the work.

In an open forum which followed, discussions by jobbers and refinery representatives quickly turned to the future of market stabilization, and then to means of financing the work.

The first resolution, unanimously adopted, was for the president and directors of the association to take such action as is necessary to encourage cooperation between refiners, jobbers, and distributors to maintain a reasonable market structure.

After further discussion the second resolution was adopted unanimously for Mr. Corey to communicate with all refinery sources to obtain reactions to the plan of an assessment of 10 cents per 1000 gallons of gasoline to finance stabilization work.

Kenneth C. Baker, of the J. D. Streett & Co., Inc., St. Louis, who spoke on "Solving the Jobber's Problems" at the State College meeting

Texas Supreme Court Approves Acreage Factor in Proration Regulations

By Lawrence E. Smith
N. P. N. Staff Writer

TULSA, June 22

SEVERAL timely and perhaps far-reaching questions have been raised in Texas by the decision of the state supreme court which, on June 12, sustained Rule 37 of the Texas railroad commission. That rule has to do with the spacing of wells.

Foremost among these questions is whether operators of wells which have been drilled under exceptions to the rule but which have, under proration, been given allowables disproportionate to those of wells spaced according to the rule, can be compelled to "make up" in some way the oil which they obtained in excess of the amount permitted adjoining locations.

In East Texas, for example, several thousand wells have been drilled under exceptions to Rule 37. That rule, adopted Nov. 26, 1919, and amended Jan. 31, 1933, insofar as it applies to East Texas, provides that no well shall be drilled for oil or gas at any point nearer than 660 feet from any drilling or completed well, nor at any point nearer than 330 feet from any property or division line. But, it is provided, "in order to prevent waste or to protect vested rights," the commission could grant exceptions.

This is a commission-made rule, not a statute. Thus, it can be revised quickly. The state's highest court indicated that it should be rewritten to take into account the varying sizes of tracts on which wells are drilled so as to recognize the equities. An instance of this would be the operator who has drilled a well on one acre and has been permitted to produce the same amount daily as the operator adjoining him with a well on 10 acres. Obviously, the one-acre man will capture the oil of the neighbor.

The point established by the court is one that has been a principal factor in the conservation philosophy developed within the oil industry and the flat pronouncement by the court that, in exercising its police power to prevent waste, the state should act in such manner as to preserve the proportional interests of operators in a field is hailed with enthusiasm by conservationists.

This point was the essence of the symposium held by the American Petroleum Institute several years ago under the general title, "A New Conception of Producing Oil and Gas."

THE Texas Supreme Court has affirmed the authority of the railroad commission to regulate the drilling. But, says the court, if the state exercises this right it should take the accompanying step of protecting one operator from drainage by another.

The court spoke plainly, and thereby raised the several practical questions which will have to be met soon. Certain of the pertinent language follows:

"We find no difficulty in ascertaining the clear meaning of the rule except that part which grants exceptions permitting the drilling of wells near another 'to prevent waste or to protect vested rights.' When this part of the rule is construed in connection with the cardinal rules of property . . . we think the language used is for the dominant purpose of protecting these property rights.

"The language used is sufficiently definite and certain to protect the fundamental rights of all concerned when construed in connection with the general rules of property.

"It guarantees the opportunity in each owner to recover his oil by providing an exception to a uniform spacing regulation that would otherwise prevent him from doing so.

"The exercise of the police power under this rule does not change the rule of property. It merely regulates and controls the way in which his property shall be used and enjoyed. Each person still owns the oil and gas in place under his land, and each still has the right to possession, use, enjoyment and ownership of the oil and gas produced through wells located on his land, regardless of origin. The primary rule of ownership is still operative. The rule of convenience becomes secondary.

"Conditions may arise where it would be proper, right, and just to grant exceptions to the rule so as to permit wells to be drilled on smaller tracts than prescribed therein. Also, conditions may arise where it would be proper, right, and just to permit tracts to be subdivided and such subdivisions drilled after the adoption of the rule; but in all such instances it is the duty of the commission to adjust the allowable, based upon the potential production, so as to give the owner of such smaller tracts only his just proportion of the oil and gas. By this method each person will be entitled to recover a quantity of oil and gas substantially equivalent in amount to the recoverable oil and gas under his land."

Growing still more emphatic on the subject of correlative rights, the court said:

"The commission, in order to prevent waste, has the power to limit the rate of flow in the same way it has the power to regulate spacing . . . This right to control the rate of flow in order to prevent waste also enables the commission to offset the advantage obtained by one who is given an exception to the spacing rule by limiting his allowable production to the extent necessary to overcome this advantage. In this way the commission, by controlling the oil stored in the common reservoir, is enabled to carry out the dominant purpose of preventing waste and, at the same time, permit each owner to enjoy the opportunity fully to realize upon his estate by developing and recovering his oil and gas."

The railroad commission thus

has its course charted. It is commanded here to recognize acreage in the making of proration orders, a thing it has refused to do in the East Texas field. It has not taken acreage into account in other fields except where operators have agreed upon a plan and submitted it to the commission for approval. Examples of such agreed plans are those covering the Van and the Yates fields.

Now, the big job ahead of the commission in East Texas is really formidable. Several thousand exceptions to the spacing rule have been granted and permits issued under which wells were drilled. Obviously, under the construction supplied by the court, these wells have taken more than their rightful share of the oil. Under the present plan of proration which began April 6, 1933—all orders theretofore having been held invalid—the only factor considered is rated potential. The field is divided into zones according to the potential of a comparatively few wells. Thus, wells in the same zone are accorded the same treatment as to allowable production regardless of the number of acres each is designed to drain.

How to rectify the inequalities of the past is the problem. The commission is practically certain to be swamped with petitions to compensate the owners of larger tracts for the drainage of their property by the small-tract operators. At least, it will be insisted that the rate of flow of the little ones be less than that of the orthodox locations. There will, of course, be a howl from the small ones but the court has spoken.

Attorney F. W. Fischer, who has some clients among the small tract people and who owns some closely spaced wells himself, says the result of the court's decision will be to raise the allowable production for the field as a whole. He argues that the marginal well law will prevent the commission from reducing the allowable of the small-tract operators materially.

The marginal well law of Texas specifies that wells of certain depths, those depths being set out in the law, cannot be prorated below a certain figure. The applicable figure for wells of the East Texas depth is 20 barrels. The commission has construed this to mean that no well in the field can be prorated below 20 barrels.

Some other attorneys say the meaning of the marginal well statute is that no well incapable of making more than 20 barrels shall be prorated below that figure. East Texas marginal wells, as the law is administered there, are those wells whose hourly potential multiplied by the factor of proration (at this time it is 3.4 per cent of the hourly flow) will yield not more than 20 barrels. That is a quite different thing than a well in some other field incapable of making more than 20 barrels in 24 hours.

Quite probably the courts will soon have to define the meaning of the marginal well law.

Court Gives McMurrey Heavy Fine Confiscates His Stored Oil

TULSA, June 22

EAST TEXAS, as a whole placid and creating little news for several weeks, grew active, conversationally, June 19 when the word came that District Judge Robertson, Travis county, had pounced upon R. J. McMurrey and associates with a fine of $25,000 and an order confiscating 650,000 barrels of oil and products.

This was dramatic, for McMurrey has been one of the most accused of operators in the field. The quarrel between him and state enforcement officers has gone on since the early days of the field. He was brought to a dead stop last fall when the federal tender board went into action and the U. S. Department of Justice obtained a restraining order from Federal Judge Bryant to prevent shipment interstate of oil and products produced in violation of state orders.

Judge Robertson ordered the sheriffs of Smith and Rusk counties to seize the oil, which is stored at McMurrey's refineries at Tyler and Arp, to give 10 days notice and then to sell it on the front porch of the Smith county courthouse. This is getting the confiscation procedure back on legal grounds. Earlier sales under authority of House Bill 581 passed during the 1935 regular session of the legislature were rushed through without notice.

In some cases the court set the price of the oil. Crude was knocked down to the person from whom it had been taken for 40 cents per barrel, fuel oil for 20 cents. The attorney general's department was handling the cases ond Col. E. O. Thompson chairman of the Texas Railroad Commission, emitted cries of pain, as did many oil men. Now it appears, everyone will have the opportunity to bid on the confiscated material.

Proceeds, after paying court costs, receivers' fees and other incidentals, go into the general revenue fund of the state.

McMurrey, according to the attorney general's office, paid his fine, which was for noncompliance with various commission orders. Early in the year the attorney general had instituted proceedings against McMurrey on a grand and all-comprehensive scale. Penalties aggregating nearly three million dollars were asked.

The list of charges was long and included nearly everything. Failure to file reports, running untendered oil, over-producing wells, failure to burn gas flares were some of the charges and each day's violation was asserted as a separate offense. He wasn't charged with carrying lighted cigars on street cars, but that was about all that was overlooked.

Receivers were actually appointed then but they did no receiving. Appeal was taken to the Texas Civil Court of Appeals, $100,000 supersedeas bond was posted and McMurrey continued in possession of his properties.

The case has not been heard by the appellate court. It is re-

ported now that the imposition of fine by the district court, which discharged the receivers, dismisses the earlier action.

The order of sale, however, will be contested, according to F. W. Fischer, attorney for McMurrey. Application for order restraining the Smith county sheriff from holding the sale was expected to be made before July 2 and 3, when the auctions are due to be held.

It is not probable that the bidding will be spirited, if the sale is held, for the buyer will have some difficulty in getting possession of the oil. The material is stored on McMurrey's property, in his tanks and in pits. He will oppose entry upon his premises. He probably will also contend that some part of the oil was produced legally, as it most certainly was for all the wells from which it came had an allowable production each day, and this raises the "commingling" issue again.

Courts have yet to sustain the contention that legal oil is polluted when stored with "hot" oil. This writer is not saying that any of McMurrey's oil is "hot," the district court has said so. An additional barrier to bidding is the refusal of the federal tender board to clear confiscated oil for interstate shipment.

Judge Robertson, incidentally, decreed that the pits in which some of the fuel oil is confined should be destroyed and made unfit for further service after the contents were withdrawn.

Except for the clearance of two sizable batches of oil that have been held up for months by the state, there was little to keep company with the McMurrey affair in public interest.

One of the clearances was ordered by Judge Bryant after the attorney general's office had asserted it had no evidence to offset the suit of the Roy I. Davis Pipe Line Co. The amount of oil involved was 104,423 barrels. It was crude oil, claimed to be allowable production from wells to which the pipeline is connected for the period July to November, 1934, inclusive of those months.

The contention was made at hearings before the railroad commission's tender board last November and December that the Davis line had collected and stored the allowable crude, the Union Refining Co., which the Davis line serves, had operated on tops purchased from other refiners. The commission then had no order requiring tenders on products. The state board, however, refused to clear the crude after testimony of some of its agents that they had found some of the wells producing more than the allowable.

The other batch of controverted oil was the 112,479 barrels which the A. & P. Pipe Line Co. had long sought to get the state board to clear. Finally a suit was filed in federal court. It was set for June 18, then passed to June 27. On June 19 the state's tender board, or "little commission," as it is known, heard the affair again.

The attorney general's office informed the board that the case was similar to the Davis case, that there was no evidence at hand to show that the oil was illegal. The board then issued a tender on the oil, from A. & P. Pipe Line to Panama Refining Co., subject to the attorney general's department writing a letter for the record which letter will assert the case could not be defended.

East Texas Allowable Cut by Commission

TULSA, June 22.—Order of the Texas Railroad Commission setting the allowable production at 1,062,387 barrels, effective July 1, was applauded by oil men, some of whom had feared that the commission, with federal restraint gone, would materially increase the allowables for the various pools in the state.

The commission set a figure slightly under the allowable of 1,064,400 barrels recommended for the state by the U. S. Bureau of Mines. The recommendation was made at the request of the railroad commission.

A reduction in allowable was made in East Texas. The June percentage of hourly potential flow is 3.4 per cent; for July it will be 3.3 per cent. The statewide hearing at Austin to hear testimony on which to write the July order was held June 17. On that date the East Texas allowable was 467,436 barrels. Allowing for marginal wells with minimum allowable of 20 barrels per day, the reduction on July 1 should amount to about 12,000 barrels.

Four New 'Confiscation' Suits Filed in Texas

TULSA—Four more suits seeking confiscation and sale of East Texas oil alleged to have been produced illegally, were filed June 21 by the attorney general in Travis county district court. Reputed owners and the amounts were: E. F. Bourg, 65,000 barrels fuel oil; Errol Holt, 64,000 barrels fuel oil; Otis M. Ramsey, 55,000 barrels crude oil and W. R. Skeen, 65,000 barrels crude oil.

While the procedure now is to advertise the oil for sale and give 10 days notice, thus affording buyers an opportunity to be present, the price may be influenced by the refusal of the Federal Tender Board to clear confiscated oil for shipment interstate. John F. Davis, member of the board, said Friday that Interior Department attorneys had expressed the opinion that such oil could not be moved interstate without an amendment to the Connally law. The point has been referred to the Department of Justice.

Conservation Body Organized

TULSA, June 22.—The New Mexico Oil Conservation Committee, authorized under the 1935 conservation law, has been organized with Governor Clyde Tingley as chairman, State Land Commissioner Frank Veseley, secretary and State Geologist E. H. Wells, member. F. J. Veseley has been appointed state oil and gas inspector and C. G. Staley, proration umpire for Lea county, was appointed a deputy of the commission. Public hearing will be held in Sante Fe, June 28, to take testimony on proposed new rules and regulations governing proration, unit and co-operative development and operation.

FHA Terms Liberalized for Oil Property Modernization

WASHINGTON, June 22

PRACTICALLY any kind of equipment or machinery costing up to $50,000 for bulk plants or filling stations can be purchased now with loans under the Federal Housing Act, according to latest revised regulations.

Moreover, a jobber with a string of service stations and bulk plants can obtain loans up to $50,000 on *each* station for repairs, modernization, and new equipment and machinery.

Regulations covering the amended FHA law have been greatly liberalized. Restrictions on who can borrow have been lifted. The whole question has been left to the reasonable judgment of the bank or other approved financial institution as a credit matter. More than 13,000 financial institutions are now on the approved list.

Under the old law, loans were limited to $2000 and had to be used for repairs to buildings or purchase and installation of new equipment or machinery which was permanently attached to the property.

The new law and regulations, besides raising the loan-limit to $50,000, say the money can be spent for such equipment and machinery "as are peculiarly adapted to the business conducted therein or necessary to the operation thereof."

This ruling makes eligible the purchase of portable or movable equipment and machinery of practically every type and description, for there are not many items needed around a bulk plant or station which are not either "peculiarly adapted" or "necessary to the operation thereof."

The act, however, specifically prohibits loans for repairing machinery, although replacements are permitted.

These loans can also be used for modernization and general repairs to buildings. Old stations can be altered and brought up-to-date. The entire loan can be used for modernization or equipment and machinery, or both, so long as the aggregate expenditure on one piece of property is not over $50,000.

Loans are not made by the Federal Housing Administration but through banks, building and loan associations and other approved financial institutions. The FHA encourages banks and others to make such loans by guaranteeing up to 20 per cent of the total loans made.

For example, if a bank makes loans totaling $100,000, the FHA will make good any losses up to a total of $20,000.

Notes may be made for periods up to five years—or longer in the case of some financial institutions. Charges for interest and/or discount and/or fee of any kind cannot total more than the equivalent of $5 discount per $100 original face amount of a one-year note to be paid in equal monthly installments. This charge is a permitted maximum. It does not preclude the bank from charging less.

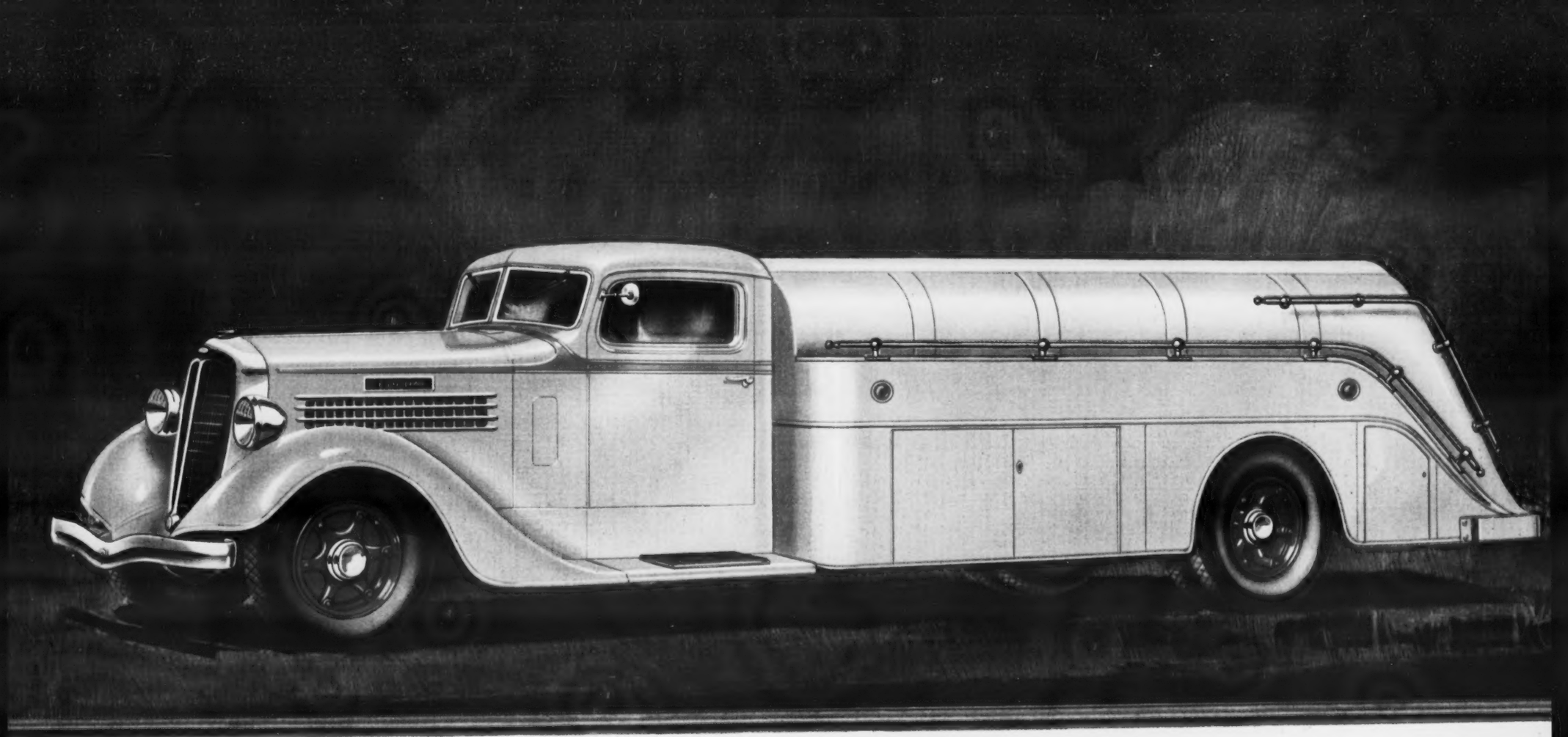
The fact that the borrower obtains his money in a lump sum and can pay "all cash" for his equipment or machinery, thus entitling him in some instances to a cash discount from the supplier, should also be considered, the FHA said.

The FHA has organizations in every state and branch offices in practically every large city. Details of the plan may be obtained from these. In addition, many equipment suppliers are already familiar with the plan and ready to co-operate, it was pointed out.

Survived Two Byrd Polar Expeditions

Lieutenant - Commander George O. Noville, executive officer of Admiral Byrd's recent antarctic trip, presents Tidewater's famous copper can to W. S. Whelan, New England manager of Tidewater Oil Co.

This specially constructed can, cached in Little America when Byrd's first expedition returned to civilization almost four years ago, was found intact, its contents of aviation oil in perfect condition, when members of the second expedition dug into supply caves. The oil was used in several polar flights and samples showed it retained its original specifications.



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FEDERAL

One of the new airflow models of the Standard Oil Co. of N. J. This unit carries 1200 gallons and has 5 compartments. Two doors at the rear swing open to provide quick access to piping connections

By John W. Thompson N. P. N. Staff Writer

Reducing Truck Operating Costs

● New Materials, Design, Fittings and Accessories Offered Today Provide Means to this End in Purchase of Equipment. Careful Study, Within the Oil Company, of Routing, Maintenance, and so on, Also Offers Opportunities to the Same End.

NOTHING is so constant as change. The observing individual who made that statement may never have seen a tank truck, or even heard of one, nevertheless, his words aptly describe the panorama of automotive transportation in the petroleum industry today.

Oil company transportation engineers, working closely with equipment manufacturers, are now coming closer and closer to making a bulls-eye on the ever-moving target—the most payload for the least cost. One well-known trucking official defined this target as "the minimum amount of the proper type and size of equipment which will handle the job with the least possible consumption of time and mileage."

To the transportation engineers well developed ability to maintain, route, and schedule truck equipment has been added the engineering ingenuity of equipment manufacturers, who now offer the fleet operator a wide selection of materials and equipment designed to lighten dead weight, reduce discharge time, and speed up the delivery schedules.

Many opportunities for lowering costs are afforded the oil company transportation manager. New steels and recently developed aluminum alloys are available which permit the use of larger tanks without increasing the units gross weight. Streamlined faucets and copper, steel, and aluminum tubing which eliminate the need of sharp bends, unite in offering the fleet operator a means of practically doubling the rate of flow through the pipe, with the result that each unit spends less time in dumping its load and more time in productive hauling.

Meters, which have met with marked success on fuel oil trucks, are now showing signs of becoming widely used on gasoline hauling units. Pumps are available with a capacity that will keep step with the increased flow rates possible with the new piping and fittings.

Engineering ingenuity has also developed many other operating features for tank trucks. Among these are a power driven hose reel; an electrically driven pump, which is supplied power by a generator which, in turn, is driven from the truck's power take-off; subsurface filling designed to minimize evaporation losses during the loading of the tank; new designs of bolsters which cut down the dead weight and a method of mounting tanks on bolsters through rubber cushion in order to reduce destructive road shocks.

Streamlining of truck units continues to be a debatable subject. All operators agree, however, on its advertising value. In view of this, many oil companies are putting the question "to streamline or not to streamline" directly up to their advertising department. If the advertising department is willing to appropriate in its budget enough money to pay for the increased first cost and upkeep

This 2000-gallon, 4-compartment, tractor-trailer unit, is being operated by the Benzol division of the Ford Motor Co. between bulk plants and filling stations within a 100 mile radius. The overall length of the unit is 31 feet. The unit is provided with a streamline rear bucket box, partitions for carrying cans and funnels, and two 4-inch hose tube carriers under the running boards. The tank is constructed with double bulkheads and flush type 12 x 16-inch manholes with 6-inch hinged type quick opening fill plugs

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cost of streamlined units, the transportation department will be glad to operate them.

Otherwise, in many cases, the men who must answer for transportation costs are not willing to assume the responsibility for the additional operating expense which streamlined units necessarily demand. There are many outstanding examples of streamlining in tank trucks operating on the streets today, which undoubtedly are building good will for the products they haul. For that reason, the companies operating these units can justify the additional initial cost and maintenance expense.

Streamlining by no means has taken the industry by storm. Many operators of large fleets are not streamline minded and still believe the primary duty of a tank truck is to haul products as cheaply as possible and that a well painted unit, even though it is not streamlined, will promote good will for its company.

The streamlined truck, regardless of the varied opinions concerning its merit, can claim credit for getting the higher oil company executive interested in the details of operating cost of his transportation department. Many fleet operators are of the opinion that, if their executive superiors would develop a complete understanding of their trucking problems, their time would be well repaid in the form of economies which need only an expression of executive approval for their realization. The streamlined truck has renewed the interest of many a high official in his truck equipment, with the result that he becomes acquainted with the many other factors which go to make up the cost of operating a fleet of tank trucks.

State highway regulations every year become more restrictive, with the result that the size of truck unit for a certain job is often governed by this factor, rather than by the type of job it is supposed to do. As a rule it will be found that, where highway restrictions are severe, rail rates are high. While this move of the railroads is obviously made to squeeze as much as possible from the oil companies without offering them any cheaper shipping alternative, in many cases it has been a boomerang to the railroads.

Many oil companies, rather than pay high rail rates in territories where highway restrictions handicap trucking operations, have installed light weight hauling units, which have been found to not only affect a great saving over the rail rates, but also to be much more economical per gallon delivered than the heavier units.

One large operator is now using 1500-gallon semi-trailer units for bulk hauling in a restricted state in competition with high rail rates. These light units are running about 7900 miles per month and are claimed to be paying for themselves in about 3 months. Besides furnishing transportation well under rail rate cost, these units have the additional advantage that they can be driven fast and hard, and are soon paid out without assuming any appreciable repair cost.

This operator follows a rule whereby he is not interested in

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This 1500 gallon, 3 compartment unit of the Sun Oil Co. is typical of the truck units in the Sun fleet. It shows how a neat appearance can be obtained without resorting to streamlining. By waxing the tanks, a paint job is required only at 4-year intervals

Practical tests in actual delivery service are now being given these novel Texaco tank trucks. The unit has a 1500-gallon capacity, and space is provided in the side cabinets for carrying 16 5-gallon buckets. Weight is 9000 pounds, length 28 feet, wheel base 140 inches, and height 79 inches when loaded. Rated speed is over 75 miles per hour, but the engine is governed to within state regulations. Brakes, accelerator, clutch, and steering are all air operated. The engine is located in the rear of the unit. More units of this type are now being built for the Texas Co.

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adding a hauling unit unless it will save him $1000 per month over the prevailing rail rate. This company has no units of over 2500 gallons capacity. By setting this limitation the company feels that practically any of its many units can be used in any territory without regard for highway restrictions, road limitations, or other considerations. It gives the entire fleet a flexibility which permits its use in almost any section of its wide territory.

Improved highways have made it possible for these lighter units to develop a greater speed and thus cover more territory than was possible with the larger units. This company has found this advantage has brought an additional saving in the elimination of over 30 company-owned bulk plants.

Another company operating one of the largest fleets in the industry has also found a marked saving in the use of lighter equipment. It has been found more economical to buy lighter equipment, which is faster and which pays itself out quickly, than to purchase larger and heavier units which require a longer period to pay out and which may become obsolete before their expiration time.

Through the east, in congested areas particularly, the engine-under-cab type of truck is finding wide favor due to its short wheel base and ease of operation. One operator is using a fleet of these units in congested areas in eastern cities. By using a thin gauge aluminum tank, 2200 gallons capacity, and aluminum bolsters, piping, and fittings, he is able to hold the job to a 26,000-pound gross weight. There are no can racks or bucket box. Skirting is eliminated; in fact the entire unit is stripped of all except necessities. The tank is mounted on the cross frame through rubber cushions which absorb road shocks and extend the life of the tank. The units are designed primarily to deliver gasoline and are a far cry from the streamlined type of unit. They are well painted and neat and consist of simply a chassis and tank.

The oil company engineer who designed these units believes that advertising is not a part of truck expense; that they are built to haul gasoline. He believes that the public reaction to his trucks will be one of respect for their efficient and business-like design.

All this does not mean to imply that the larger capacity units are not in favor with many oil companies and do not serve their place in the industry. Many operators are still of the belief that the largest possible truck unit allowed by law is the most economical, especially for bulk hauling. They will show that doubling the capacity of a unit does not double the operating cost per mile, but

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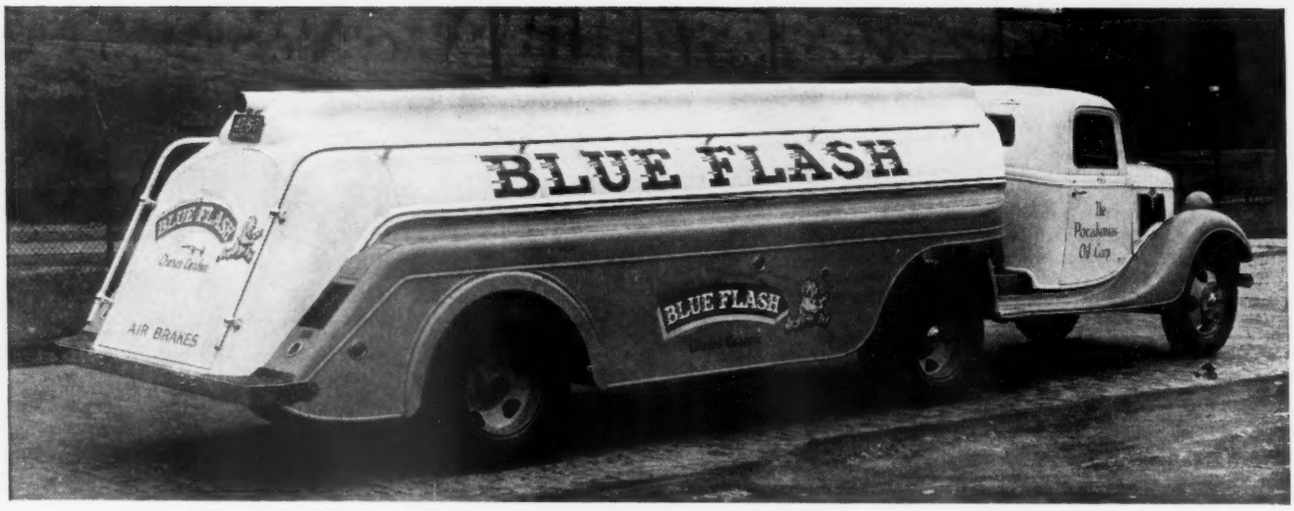
This 3900 gallon, 6 compartment, trailer tank has heads and shell of ¼-inch aluminum with aluminum underframe. The piping is 2½-inch steel tube. Weight of the tank and fittings is 4175 pounds. The length of the entire tractor semi-trailer unit is 40 feet, and the width 8 feet



This new tractor and semi-trailer unit recently placed in operation by the Pocahontas Oil Corp. in Cleveland, has a 1250-gallon, 4-compartment tank constructed of high tensile steel. It is typical of the lighter sized units which many oil companies are now using for retail deliveries

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increases it only about 30 per cent. They will tell you that ample reserve power is a necessity, not from the high-speed standpoint, but from the economic need of maintaining reasonable average speeds on the rolling highway or on grades.

Advocates of heavier units will argue that the heavier duty tractors allow the use of bearings, gears, and axle shafts of greater cross-section, so it is possible to keep the operating stress well within the capacity of these various parts, thus contributing very definitely to longer life and uninterrupted operation.

Many transport operations are now on a 24-hour basis, covering 7500 miles each month, and some believe that the heavier units, being able to maintain a higher average speed, very often contribute to several extra trips in the course of a 30-day period, "very materially offsetting false economies set up as a result of holding down the initial investment by the use of lighter equipment," as one executive expressed it.

Tractor-trailer units, now finding their greatest possibilities in bulk hauling operations, really began to make their presence felt in the oil industry when the recent depression was in its infancy. They offered the hard-pressed operator a means of hauling more pay-load with the same power or the same pay-load with less power.

Aside from this point, an outstanding advantage of the tractor-trailer unit is its adaptability for continuous operation where an extra tractor unit is maintained. When the tractor requires servicing, a reserve tractor kept for this purpose simply couples to the trailer and the load-carrying unit continues its work. This feature not only means a saving in the continuous operation of the load carrying unit, but also that there is no curtailment of service to the customer.

In recent years many oil company transportation engineers have given considerable study to intensifying the use of existing equipment. In large fleet operations the dispatcher is a key man and through him there is a real opportunity to route and schedule units in such a way that the maximum work per hour or per mile is obtained and so that the return loads may be kept to a minimum.

Operators have found, after a careful study of their delivery records and routes, that, by a rearrangement of schedules and deliveries, many economies can be affected. Many factors enter into such a study of routing. The customers' buying habits must be known, storage capacity at each unloading point should be determined, and customers' credit limitations should be known, as deliveries are often determined by this fact rather than by storage capacity. Another consideration in the plotting of a route is the truck loading facilities—its distance from the delivery points, its capacity, its loading equipment, and so on.

Such a study was made in a small New England community

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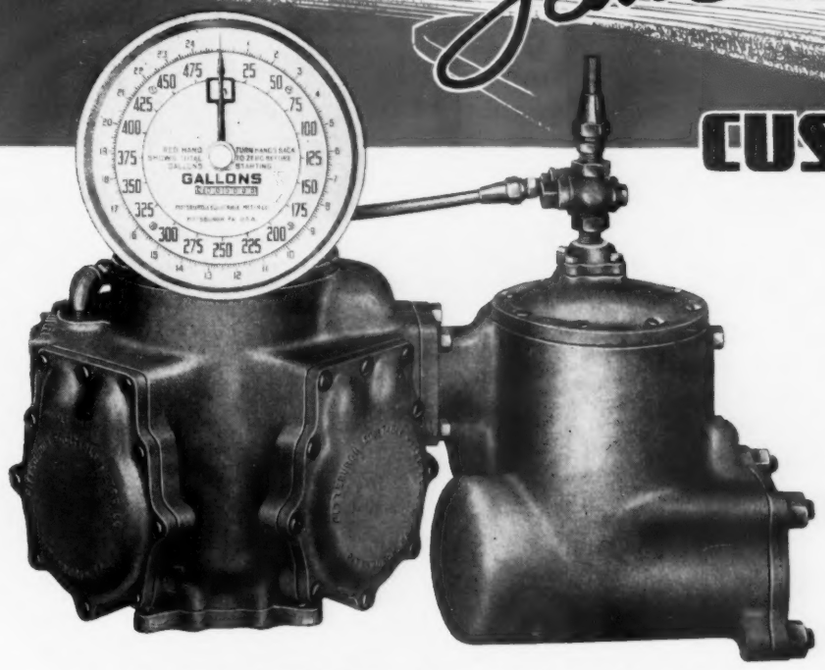
A Standard Oil Co. of Indiana streamlined unit of 1500 gallons capacity. The tank is made of steel and has 6 compartments. A special cab was designed to blend into the tank outline. A specially constructed lift bumper conceals the faucets and manifold

PITTSBURGH METERED TRUCKS *leave* SATISFIED CUSTOMERS



Accuracy, Speed, Ruggedness must be built into tank truck meters to give the performance demanded of them.

The Pittsburgh Piston Meter, with accuracy at ALL flows, has sufficient speed to meet the fastest delivery schedules without sacrificing precision measurement. It measures through True Positive Piston Displacement. All liquid entering the meter is measured, none by-passed. For each piston stroke an amount of liquid is displaced equalling at all times the capacity of the cylinder in which it operates.

The meter is light in weight, due to the aluminum construction, yet ruggedly built to withstand the jarring effects of rough roads. A Combination Air Eliminator, Vacuum Breaker and Strainer is assembled with the meter as a compact, easy to install, complete unit. Two types of registers can be furnished; either the vertical type as shown, having a large, easy to read dial and set-back pointers, or the horizontal, straight reading type with separate totalizing and set-back counters.

Meter your trucks with Pittsburghs.

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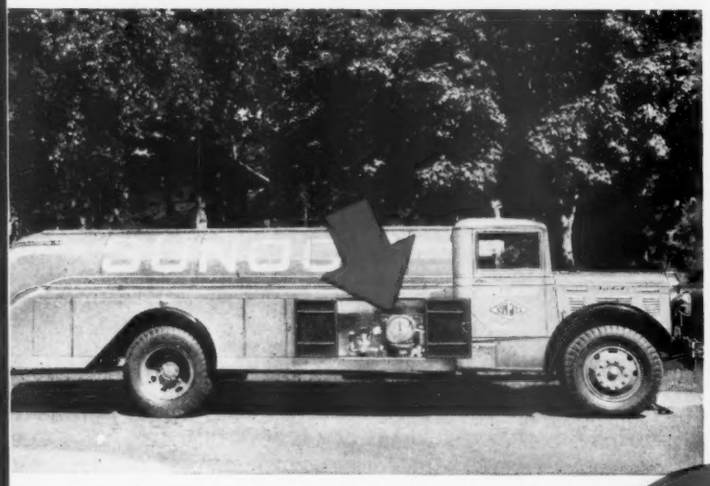
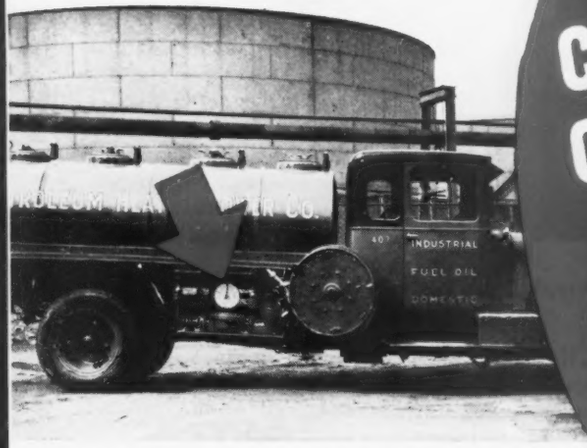


Stream-line truck equipped with a Red Seal Auto-Stop Meter and operated by John B. Briggs, Homer, N.Y., agent for Sunoco gasoline and motor oils.

The Texas Co., Chicago, Ill. know from experience that a Red Seal Tank Truck Gasoline Meter convinces the buyer he is getting all the gallonage he pays for.

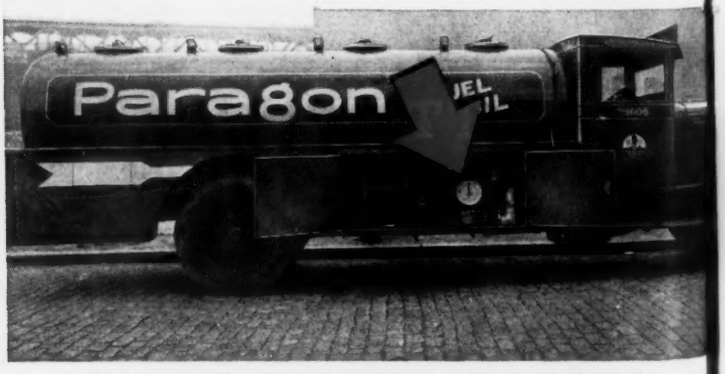
THESE COMPANIES CASH IN ON RED SEAL $AVING$



Auto-Car Truck of large eastern disttibutor of fuel oil, Petroleum Heat & Power Co. Inc., Greenpoint, Long Island, N.Y. equipped with Red Seal Meter. This company is now using over forty Red Seals in truck service!

This Red Seal Auto-Stop Meter automatically completes the delivery of a previously selected gallonage. According to the Rochester Ice & Cold Storage Utilities Inc., Rochester, N.Y., it is "not only easy to operate but accurate and efficient."

Warner-Quinlan Co., New York, N.Y., producers and refiners, "have fifteen Red Seal Meters in active service and from a delivery and maintenance standpoint they have been very satisfactory."



Truck of one of the largest fuel oil fleets, equipped with Red Seal Meters, operating in the metropolitan territory, New York, N.Y. Paragon Oil Co. Inc., Glendale, Brooklyn, N.Y.

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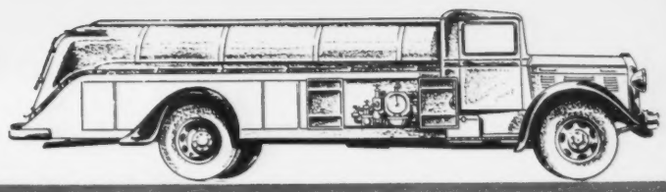
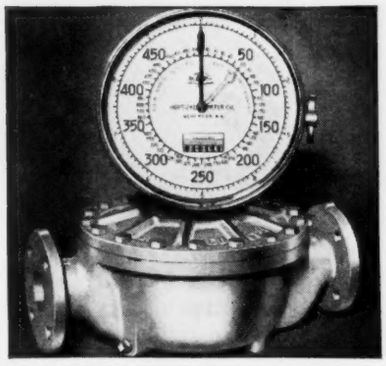
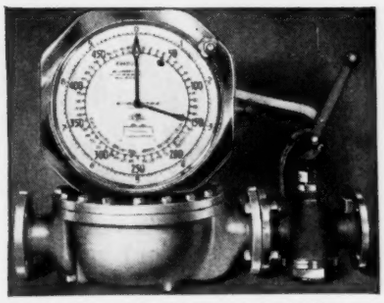


Stop over-filling... Detect errors... Control sales...



Red Seal Tank Wagon Meter. Of large capacity, compact and light in weight, it is ideal for truck service. The dial is of the "far vision" design, easy to read even at a distance.



Red Seal Auto-Stop Meter automatically completes delivery of previously selected gallons.

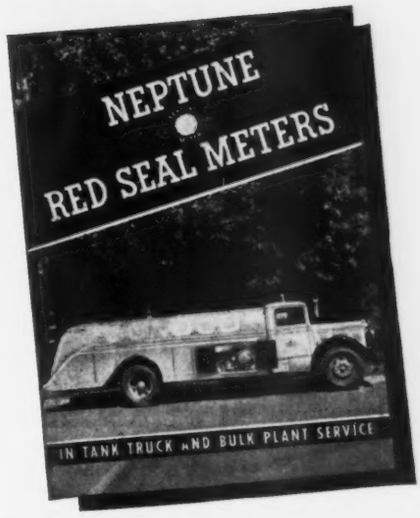
ONE COMPANY tells us, "Regret I did not buy this Red Seal Meter two years ago." Another reports, "Can rely on these meters exactly to the pint...an absolute positive check on sales." Still another says, "Red Seal Meters have saved us many times their cost, in speeding up our delivery service, and in saving losses we would not otherwise overcome in handling gasoline."

And so it goes. One company after another is finding Red Seal Meters the best investment it ever made.

What can they do for you? Write for a copy of "Red Seal Meters in Tank Truck and Bulk Plant Service" and see for yourself!

Lasting Accuracy Without Costly Maintenance

There is only one moving part in the measuring chamber of a Red Seal Meter,—the positive displacement oscillating piston. Here you will find no piston rings to refit, no piston leathers to replace, no valves, no crank shafts, no starting or stopping reciprocating parts, all of which are complicated devices, likely to get out of order.



Costly maintenance and upkeep are unknown to a Red Seal. Thanks to its simplicity, it is accurate. And it stays accurate.

It pays to push "Metered Fuel Oil Deliveries"

"Metered Fuel Oil Deliveries" is still a new idea. If you are handling fuel oil, you ought to plan now to cash in on it. Don't delay. Get your share of the growing volume of fuel oil sales that lies ahead. A small investment in a Red Seal Tank Truck Meter starts you off. Then the sure-fire Red Seal Fuel Oil Merchandising Plan, available to you free of charge, goes to work and helps build business for you.

★

Write us for details. Don't wait until it is too late.

NEPTUNE METER COMPANY, 50 West 50th Street, New York, N.Y.

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NEPTUNE RED SEAL TANK TRUCK METERS

where five 1500-gallon units and one 1250-gallon unit were operating over five routes from the bulk plant. By a careful route study involving the above mentioned factors, it was found that the number of routes could be reduced to three without impairing the service to the customers. This reduction meant that three 2000-gallon units, plus a 1500-gallon unit for Fridays and Saturdays, could do the work formerly done by the six trucks on the schedule.

Another illustration from the same company's operations concerns a small gasoline bulk plant. The truck equipment consists of two 1000-gallon tank trucks and a small stake truck. Operating 8 hours each day, these trucks average during the peak season about 45,000 gallons per month each, and an average of about 1200 miles each. Their average speeds are 17 miles per hour. Route studies proved that one 1500-gallon truck, operating an average of about 21 miles per hour and working 10 hours per day, would run about 1700 miles per month, and would be sufficient to serve the territory even after allowances were made for business increases. The stake truck showed a small time and mileage usage and few regular delivery points, which eliminated it in favor of a contract hauler.

A large eastern oil company has introduced a new routing and dispatching plan designed to eliminate unnecessary hauling costs by grouping the delivery locations into districts. The territory surrounding each bulk plant is laid out in zones, so that a glance at the dispatcher's map will show the zones in which the day's deliveries are to be made. These orders are then grouped according to zones and distributed to drivers, each of which makes his stops in one zone or in adjacent zones. This plan permits truck expense to be segregated according to the zones in which each unit operates. In other words, a truck which makes a long haul to reach its unloading points will show a higher cost per gallon delivered than one which serves a near zone.

So, in looking over the transportation picture, many opportunities are to be found for reducing operating expense in fleet operation. Lighter tank materials are available to reduce the dead load. Tubing and faucets are now designed to permit the product to flow more freely and quickly, which means a shorter period for dumps and more productive hauling time on the road for the truck. Meters and pumps are already doing their respective parts in reducing the amount of time the truck must spend at any one stop.

The ingenuity of oil company transportation engineers in expanding the use of existing equipment and in rerouting and rescheduling has been rewarded by lower delivery costs. Higher company officials who are turning to their transportation departments for help in the battle for continually lowered marketing costs are finding a resourceful group of men, who need only executive co-operation to show further results in lowering transportation costs.

Streamlining the Truck Flow System Increases Rate of Discharge

THE automotive department of nearly every important petroleum marketer is today wrestling with the problem of speeding up the delivery of gasoline. Whether the object is to decrease the amount of rolling stock necessary to deliver a given gallonage or to increase the dumping rate of present equipment—rapidity of discharge is the paramount consideration.

At the top of each truck tank compartment is the fill cap or manhole, inside of which the vent is usually housed. Considering the very important function which this lowly device performs, it has never been accorded the attention which it justly deserves. To perform its function properly a vent should be so designed as to permit the free and unrestricted flow of vapor or air in such volume that it will not retard the discharge of liquid from the tank nor create a vacuum in the compartment.

It should be capable of maintaining a slight positive pressure under normal operating conditions to conserve the vapors during transportation but venting freely during discharge. Ample areas of valves and passages and free operation of the valve parts are essential. The design of the vent should also preclude spillage of the liquid over the tank shell when in motion or when the truck is brought to a sudden stop, and prevent dumping of the tank contents in the event the truck is overturned in a highway accident.

The modern oil truck that is equipped for maximum safety as well as rapidity of discharge has an internal hydraulic valve installed in the bottom of each compartment. This valve should permit an unrestricted liquid exit and it has proven highly desirable to install valves of a size in excess of the outflow piping to provide the maximum flow characteristics. Valve and elbow assemblies are procurable in which the elbow has a greater internal area at the connection to the valve than at its outlet. This gives a practical venturi effect to compensate for the normal retarding of velocity due to the 90° curving of the flowing liquid. The oversize inlet to the elbow and the smaller outlet gives greater force to the outflow of liquid, the effect being much the same as a nozzle on a hose.

The consideration that engineers have given the flow lines has been from the viewpoint of weight reduction, as well as increasing the flow rate. The use of heat treated aluminum tubing of lighter wall construction accomplishes both purposes. Compare for instance the weight and area factors of 2.5-inch iron pipe with aluminum tubing of the same outside diameter and a 16 gauge wall thickness. A few figures will indicate that, through the use of tubing is obtained a 24 per cent increase in

McDonald Is Proud to Present . .

THE MODERN Streamline Faucet

Plate 952
Furnished Bronze
or Aluminum
Size, 2 inches

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particularly important on meter-equipped trucks.

Special Boss . . . . . .

may be drilled and tapped for use with vacuum or syphon breaker.

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convenient, malleable iron handle constructed to permit three stages in delivery rate.

Fool-Proof Locking Device

simple, but effective.

Stuffing Box . . . . . .

of typical McDonald efficiency, located on non-pressure side.

High Grade Workmanship . .

honestly made, carefully finished, conscientiously inspected.

inside area and this certainly is important in its effect on discharge rate. Considering the present efficiency in welding there is really no good reason for having the discharge piping any heavier than 16 gauge.

At the outlet end of the piping or tubing we usually find a meter with strainer and syphon breaker. Many petroleum engineers look upon them as necessary evils and give them very little serious consideration, with the result that they are often carelessly placed, inefficient in operation and entirely too small in capacity to perform their function without seriously retarding the volume of discharge. The strainer should have a free screen area of approximately ten times the pipe area. Since this can best be obtained by a vertical cylindrical shape, it is desirable to bring its discharge out under the truck frame into the meter. Thus you increase the liquid head to the meter and you allow ample height in which to stop the flow when the compartment is empty, through the action of the syphon breaker, whose logical location is in the top of the strainer housing.

The direct flow of liquid from the strainer into the meter inlet is regarded as a maximum. If all flow equipment from the internal hydraulic valve to the meter inlet is calculated to permit a flow equal to the maximum capacity of the meter, it will be found that, when the liquid head is approaching the empty compartment level, no sacrifice of weight or space has been necessary which is in any way comparable to the benefits resulting from increased flow during the life of the tank.

Since meters will record air as well as liquid, it is obvious that, as the meter forms a trap in the discharge system, the syphon breaking means of by-passing the meter is requisite to preclude draining the meter. It is pertinent here to remark that either the top outlet meter or an outflow meter connection definitely preventing drainage of any part of the meter is highly essential to meter accuracy. If the meter outlet is below the top of the liquid chamber and no trap is provided, it is obvious that the meter will drain to the outlet level each time a compartment is emptied, or each time the flow is stopped, if a dry discharge line is employed. Such installations are usually frowned upon by the sealers of weights and measures. It goes without saying that the meter is a definite choking point in the outflow system and all other factors must be designed with the maximum capacity of the meter in mind.

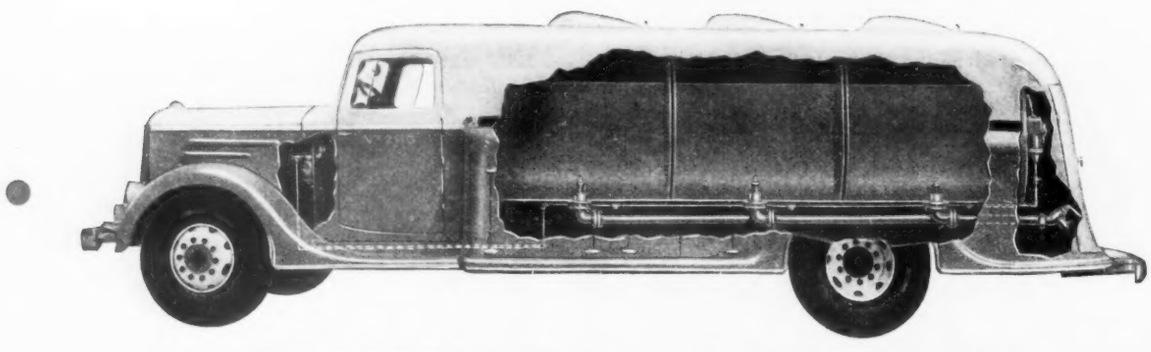
BEYOND the meter there is little opportunity to give impetus to the flow of liquid but there are still methods through the employment of whcih the flow may be carried on to the full capacity of the meter. Beyond the meter the operator should use a streamlined faucet of ample capacity and having the least effect of altering the direction of flow. To this should be attached a hose of ample size to handle the discharge of the meter without impeding the flow.

On the end of the hose should be an elbow with an inside area at least as large as the hose and with the radius of the bend as long as possible. The discharge end of the hose should be fitted with a spout of light weight, non-sparking metal which can be dropped into the fill pipe of the underground tank. It is essential that this discharge spout be long enough to create a definite syphonic action once the flow is started. The flow rate of the entire delivery system will be materially increased by applying this sucking action.

Delivery speed can also be enhanced if a little more thought is given to the underground storage system. When the underground tank is installed it should be borne in mind that, if the full speed of the delivery equipment is to be taken advantage of, the tank must be equipped with a fill pipe of sufficient diameter to accommodate the discharge spout on the end of the delivery hose. Several concerns who have been quite successful in standardizing the layout of their filling stations have facilitated delivery speed by giving a little thought to the location of the storage to be filled and the position in which the truck stands while the fill is being made.

In many instances the layout of the lot has been made in such a manner as to position the truck at a slightly greater elevation while dumping and in this manner increasing the liquid head.

From the observations above, it may be assumed that streamlining has very definite engineering advantages in addition to the greater aesthetic appeal. The scientific applications mentioned are suggestive of its increasing efficiency in the handling of slow moving, confined liquids. In the entire engineering and layout of the discharge system, from truck compartment to underground tank, it is really surprising to note the increased efficiency that can be gained by simply watching minor details.



Cutaway view of modern truck, showing streamlining of the piping

This 2000-gallon, 8-compartment tank truck is typical of the newer units now being placed in service by the Tide Water Oil Co. The tank is made of standard gauge blue annealed steel, with single bulkheads

How to Buy a Truck

As the author says himself, in his introduction, he has given his subject wider latitude than his subject implies. He also discusses when to buy a truck and takes up such factors as the efficient use of existing equipment, presenting a formula for calculating seasonal requirements, and also the matter of routing and scheduling.

In the purchase of new equipment, standarized along certain prescribed lines is advised and factors are presented for consideration in choosing a make of truck. While the experience of the author has been with an oil company maintaining a large fleet of trucks, he has prepared his remarks with the needs of the smaller operator in mind. The address was presented at the last annual meeting of the Society of Automotive Engineers, in Detroit.

By T. L. Preble*

TAKEN literally, the title assigned to me would necessarily refer solely to the factors to be considered after the decision to purchase has been made.

I believe, however, that discussion in this paper of the factors which should precede, and lead up to the decision to purchase will be appropriate.

Thus, in effect, the title becomes "When and How to Buy a Truck." This contemplates:

First; the setting up for each area of operation of an ideal, in terms of size, number and types of equipment, to work toward.

Second; the most efficient use of existing equipment thru such alteration and reallocation as is profitable.

Third; the selection of new equipment on the basis of standards created to facilitate the nearest possible realization of the ideal.

Volumes have been and probably will be written on subjects bearing on this question of "How to Buy a Truck." It is recognized that a subject possessing so many intangibles and controversial elements throws such difficulties in the way of concise and useful discussion as to make it particularly necessary to adhere to a definite point of view. The view point I shall endeavor to maintain as the "thread of the story" in this paper is that of transportation economics. No endeavor will be made, therefore, to discuss matters of chassis and equipment design from a technical standpoint.

*Supervisor of Automotive Transportation, Tide Water Oil Co.

Setting Up an Ideal

I recognize, in suggesting the setting up of an operation ideal, or pattern, to work toward, as a preliminary to considerations of what to buy, that certain types of business are confronted with so many unpredictable conditions as to make an "ideal" set-up highly theoretical, and relatively useless. I recognize, too, that in practically all businesses we must shoot at a moving target.

I do believe, however, that many concerns having transportation operations of relatively fixed and constant nature will benefit from the process of analyzing their highway transport activities in each territory or route from a standpoint of assuming the necessity of purchasing a complete new set of equipment. In effect, it is a process of asking oneself "If, for some reason, I suddenly found myself without any equipment whatsoever in this territory or route, just what would I buy, and why?"

The subject is too involved for lengthy treatment here, but I strongly recommend studies of this nature as being fundamental to the question of What to Buy? Specially, I refer to

(a) Studies of volume of merchandise or work to be han-

dled, including trends, and seasonal variations.

(b) Studies of the potential "work factor" of modern motor truck equipment. Such analysis should include statistical knowledge of average running speeds, loading time, unloading time and maximum possible work period per day.

(c) The setting up of the minimum amount of the proper size and type of equipment which will handle the job to be done, with the lowest possible consumption of mileage and time.

To illustrate the point crudely, let us assume a small bulk plant operation in the gasoline business. Two 1000-gallon trucks and one small stake truck exist. The gasoline trucks show, during the peak season an average gallonage per month of 45,000 each and an average mileage of 1200 each, with a daily work period of 8 hours. Each has an average speed of 17 miles per hour. Based on the above analysis it is proved by route studies that one 1500-gallon unit, with a probable average speed of 21 miles per hour, working 10 hours per day and running 1700 miles per month, will suffice, even after allowance is made for probable increases in business. The cost per gallon delivered will be decreased.

The stake truck, showing but a small time and mileage usage, and a relatively small number of fairly regular points of delivery can be eliminated in favor of a contract hauler.

Thus, whereas it may not be possible at the moment to transfer or eliminate the existing equipment, nevertheless, a practical workable ideal has been set up; a goal to work toward.

All of the above is in my opinion a desirable preliminary to the second of the three phases which are involved in this problem of "When and How to Buy a Truck,"—namely

The Efficient Use of Existing Equipment

If it goes without saying that the most efficient use of existing equipment must be secured before making the decision to purchase, it should also be self-evident that the collection and tabulation of experience data is indispensable; not only the usual cost accounting data but also facts relative to operation.

Before discussing this topic in more detail, I want to make the point that, whereas there are obvious limitations of the amount of desirable data to collect and maintain, dependent upon the size of the company and the number of its vehicles; and whereas sometimes we find instances of owners maintaining large numbers of interesting but useless records, nevertheless in many instances wholly inadequate records are kept.

This inadequacy, in some instances, may be chargeable to lack of understanding on the part of transportation executives of the fundamental philosophy of intelligent attention to the multitude of details pertinent to the lowering of costs, and to the securing of maximum intensity of use of equipment. In many cases, however, I believe that this lack of sufficient records results from an insufficient appreciation by higher company executives of the fact that overhead expense of this nature may oftentimes increase to a seemingly large percentage and still be the direct cause of satisfying reductions in over-all expense.

As long as each record can be proven to be genuinely useful in the reduction of cost in terms of product hauled or work performed, there need be no fear of cluttering up an operation with irrelevant and useless "statistics for statistics sake."

The tremendous importance of cost accounting, and its usefulness in determination of make of vehicle to purchase is self-evident. My purpose here is rather to emphasize factors, often neglected, which will help to insure a maximum intensity of efficient use of vehicles on hand.

The operator who purchases new equipment without having exhausted every resource to secure the most economical usage of present equipment is missing a large bet. The very process of solving this problem will be helpful to the making of decisions involving re-allocation and elimination of equipment.

The following fundamentals are deserving of more attention than they have received. Proper attention to them will in many companies secure a much greater factor of intensity of use and therefore a lower cost per mile run and per unit of product hauled.

(1) Preventive maintenance. It is difficult to understand the reasons why the principles and practices of genuinely preventive maintenance have not received unanimous recognition. Direct costs and time-out-of-service costs are lowered by preventive maintenance.

(2) Night service. There are still those who say it can't be done successfully. But it is contributing successfully and substantially to many a fleet, and to many small operators as well. Night service need not be limited solely to operators using their own maintenance facilities and personnel.

(3) The districting of vehicles by make, wherein scattered fleets are involved. To such degree as this can be accomplished results will be obviously beneficial.

(4) The use of contract or common carriers where adequate service can be maintained at lower cost. This particularly applies to operations of temporary nature and to certain types of operations involving a low work-factor on owned equipment.

(5) The making of equipment alterations, where feasible, which will broaden the usage of the vehicle.

(6) The calculation of seasonal requirements in order that the shifting of equipment may be planned to best advantage. Knowledge in advance of numbers of pieces of equipment which will be necessary is highly important to the skillful placing of equipment. Where there is a reasonable consistency to monthly fluctuations, and to yearly trends, the following simple formula may be found useful, though not infallible.

Example:—In a given area at this time (winter) 6 pieces of equipment are in full time use (defining "full time" in terms of factors given later in this paper). How many pieces of equipment will be necessary during the 3 peak months of July, August and September?

Solution: $\frac{6}{x} = \frac{w}{s}$ where w = volume of total deliveries per

Look to the Petroleum Industry's First-choice

Trucks for THE MOST MODERN DESIGN AND PERFORMANCE!

One of two Model 730 "Underslung Power" Whites with White 12 cylinder "pancake" engine, recently put into service by Crew Levick Co., Philadelphia. 2400 gal. tank.

● White Trucks always have been the first choice of the petroleum industry. The ability of Whites to haul more gallonage at lower cost—the dependability of Whites day-in and day-out—have never been matched.

Today White maintains its leadership with the most modern line in the industry.

For transport service White's exclusive "Underslung Power" development makes possible the use of the latest in streamlined tanks, when desired. It brings to the heavy duty field for the first time many other features made possible solely by the use of the White 12 cylinder "pancake" engine—the only engine of its kind in the world.

Flat enough to be placed underneath the floor—with cab moved forward to extreme front of truck—it gives shorter over-all length per wheelbase—perfect weight distribution with lowest center of gravity—more gallonage on every wheelbase.

The new "pancake" engine itself delivers performance and economy of operation never before approached by any truck engine in its field.

In a typical gasoline hauling operation, one "Underslung Power" White (2400 gals.) has replaced and now does the daily work of two trucks of 2890 gals. combined capacity—and the operator reports exceptional gas mileage—low oil consumption—and a smooth flow of power even on the steepest hills.

For general delivery purposes to dealer stations, etc., including home fuel oil delivery, the new White Models 712 and 718 for 1000 to 1500 gal. tanks are just as new in design and sensational in performance as the "Underslung Power" Models. They have the power, speed, flexibility and dependability you need—and with the exclusive White "K" type of chassis design allow more gallonage per wheelbase. They have the White ruggedness and stamina that insures on-time schedules—and brings down delivery cost per gallon. Their appearance with modern tanks is of tremendous advertising value.

For full information see your local White Branch or Dealer or write The White Motor Company, Cleveland.

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American Oil Co.	Standard Oil (Ind.)
Magnolia Petroleum Company	Standard Oil (Cal.)
National Refining Co.	Standard Oil (Norway)
Richfield Oil Co.	Sun Oil Company
Socony-Vacuum Corp.	Texas Company
Standard Oil (N. Y.)	Tidewater Oil Co.
Standard Oil (N. J.)	Union Oil Co.

—and many others

White TRUCKS

hour at this season, and S = volume of total deliveries per hour estimated for the peak season.

("Per hour" figures are derived from normal number of working hours per day.)

Thus, if (in the gasoline business)

w = 3000 gallons delivered per hour

s = 4500 gallons delivered per hour

$$\text{Then } x = \frac{6s}{w} = 9 \text{ trucks.}$$

Needless to say this assumes 3 additional trucks of the same size and speed.

(7) Routing and scheduling. The time allotted for this paper does not permit a discussion of detailed methods of plotting routes and schedules. I believe, however, that herein is a potential "gold mine" to many a company, and that further consideration of the subject by the society is warranted.

Usually, proper routing is a process of allocating work to a vehicle with the object of obtaining

(a) A maximum of deliveries (or work) per hour and per mile run.

(b) A maximum number of productive hours per day.

(c) As even a daily flow of work as is possible.

(d) Flexibility of assignment in order that emergencies may be properly taken care of.

As a preliminary to actual assignment to a route the vehicles' average running speeds in the area involved should be pro-determined, and average loading and unloading times estimated.

The effect of skillful routing and scheduling in increasing the intensity of use of equipment is often astonishing.

As a test of the effectiveness of routing the tabulation of the following daily and weekly factors from time to time is recommended (by route or area). (a) Number of delivery stops, productive and nonproductive. (b) Miles run. (c) Hours of productive truck use. (d) Number of trucks operated. (e) Product (e. g. gallons) delivered per mile run. (f) Product delivered per productive hour. (g) Amount of product returned, undelivered.

The above data represents averages, per truck. Factors "c", "e", and "f" are particularly important as measures of intensity of use.

The final measure of the effectiveness of a routing study in a given area is naturally that of tabulation of

(a) Number of trucks eliminated, multiplied by fixed charges of same. (b) Driver-hour saving, multiplied by average hourly wage. (c) Mileage saving, multiplied by variable charges. (d) Net saving in terms of volume of product delivered (i.e. cost per ton mile, or per gallon or package delivered etc.)

(8) Sound driver policies. Rapid studies have been made, especially in some of the larger fleets in this vital matter of the selection, training and control of drivers. Much remains to be accomplished, however, especially on the part of smaller owners of truck equipment. The importance of the driver, not only in respect to safety, economy, and all-around trucking efficiency, but also in respect to the attitude of the public toward the owner, and trucks in general, cannot be over-emphasized.

(9) Studies of methods of speeding up loading and unloading are of obvious importance, but can only be mentioned here as deserving the constant attention of all truck owners, large and small. Analysis of this problem has produced surprising results to many an operator.

(10) The same thing is true in respect to the problem of efficient allocation of trucks (e.g. slow speed trucks to congested routes, questions of size, and the like).

Ordinarily the purchase of replacement equipment can only be justified subsequent to an analysis of the factors previously mentioned. Such analysis should not only result in the most efficient use of equipment but should also bring to light such cases as may exist of inadequate or poorly adapted pieces of equipment.

Selection of New Equipment

The highly controversial question of when to retire a motor truck is one which unfortunately the title of this paper will not permit me to escape.

We have been told that the slide-rule is more potent than the rule of thumb. It usually is; but in this case it seems to me that the thumb of many an operator is in the near vicinity of his nose as he looks back upon more than one mathematician whose slide-rule pushed out deductions which were interesting, but which unfortunately were based on premises that contained many variables.

I certainly agree with the desirability of giving constant consideration to the factors of increasing variable expense, and decreasing investment value, which have been reduced to formula; —but not to these factors alone.

At the present time, it seems to me that there is no substitute for sound judgment, based not only upon factors of obsolescence, fixed and variable costs and trade-in valuations, but also upon considerations of profitable application in terms of the factors of usage discussed previously in this paper.

Whereas I realize that size of fleet, matters of expediency, and factors of purchasing policy have a bearing on the question, I believe that operators will in many cases, do well to revise their practice of "buying in large chunks." Can 100 vehicles wear out and become null and void all on the same identical day? It seems to me that the conception of a fairly even flow of mileage, into and out of fleet is more in keeping with the extraction of all of the profitable mileage of each vehicle.

Furthermore the above process of buying eliminates recurring peak loads of preparation for purchase of preparation for operation after delivery from purveyors, and of financing.

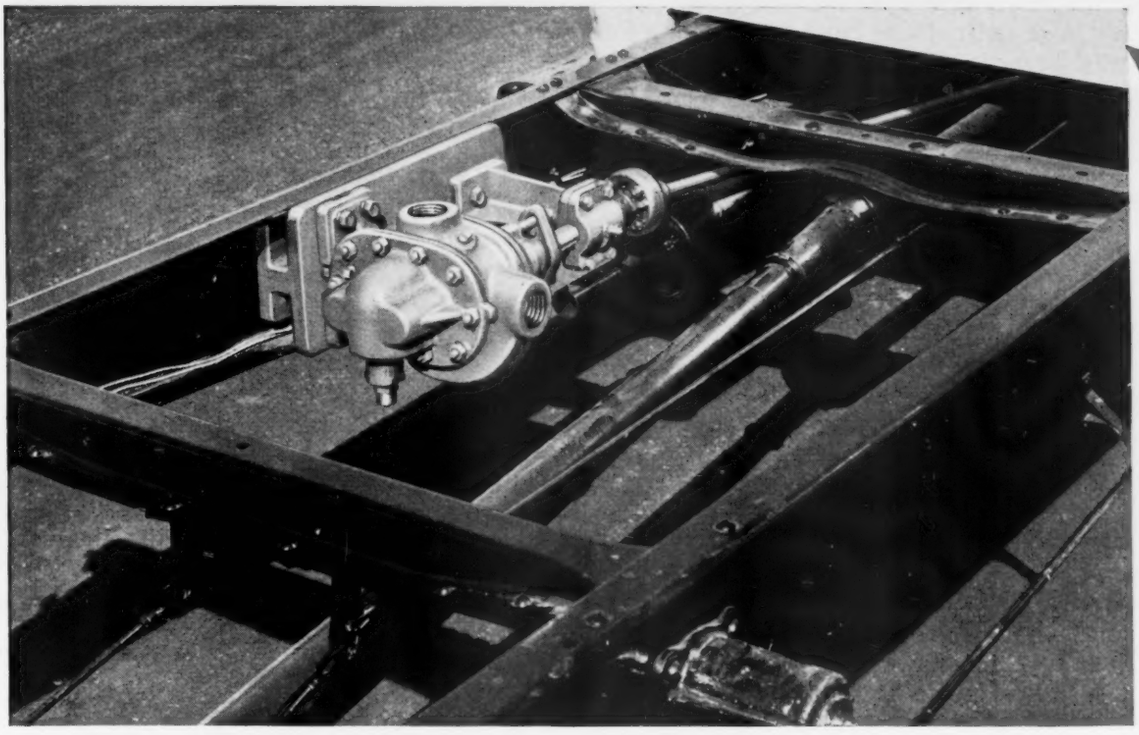
The creation of standards upon which to base purchases, is of course highly important. Here again is an item which can easily be under done or over done.

I am not in agreement with such few operators as evince a desire to completely re-design a truck before they will buy it. After all, designing engineers have families to support.

If, however, based on specific and ample experience data, a given design detail can be proven by the operator to need attention no one is to blame but the manufacturer if the purchaser specifies alteration.

I believe that the operator

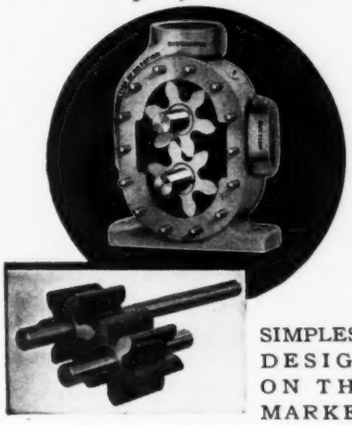
TANK TRUCK PUMPS



A Roper "Direct-Drive" outfit mounted on 1934 Chevrolet

Equip new trucks - - - modernize old trucks - - -

with *Dependable* Roper Rotary Pumps



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In addition to tank truck pumps, Roper manufactures a complete line of DEPENDABLE hand and power rotary pumps for handling gasoline and oil.

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Gentlemen: Please send without obligation Bulletins and prices on Roper Rotary pumps (check literature desired).

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Company.....

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will benefit if he will work toward standardization along the following lines.

(1) By means of operation studies determine job standards, and translate such standards into sizes of vehicles. (Needless to say State Laws will force many a compromise.)

(2) Plan for interchangeability of bodies (and sometimes other equipment) as far as possible. Thus, for a given size he should insist upon a given CA dimension and frame length.

(3) Set close tolerances on such items as weight distribution, effective brake lining area, road speed, ability, net chassis and body weights, and axle capacities.

(4) Consider price class, based on types, sizes and jobs of vehicles. Accurate cost accounting is of obvious importance in this connection, including a mileage basis of depreciation which, however, should also possess time limitations and be subject, therefore, to adjustment when desirable.

(5) Standardize on the same tire sizes for a given truck capacity, and upon type of rims.

(6) Standardize (after analysis of experience data) on accessories, such as booster brakes, air and oil cleaners, lubrication fittings and the like. This will be particularly helpful to maintenance personnel.

(7) Give careful attention to fine appearance of equipment, and to as much uniformity of style and of coloring as conditions will permit. The most favorable reaction of the operators own organization and of the public is an objective well worth striving for.

Choosing Make of Truck

Various "rating charts" covering largely the design, material and workmanship of motor trucks, have been recommended. I believe that the average operator must rely largely on his cost records, his records of road failure, and his records of time out of service as a basis of his judgment as the *price* and *quality* of the vehicle. Incidentally such tabulations, plus records of frequency of sale of repair parts, should be of vast interest to the designing engineer. What an interesting chapter a "buyers' guide" would have, if it contained, for a given industry a mass record of time out of service because of mechanical failure, and of road breakdowns—by make, size, and type of use!

The buyer, consciously or not, rates a vehicle before he buys it, but I do not believe that the average truck owner is equipped to rate comparative specifications except in terms of the above factors. Unless matters of financing force a compromise, the factor of price should naturally be rated in terms of transportation cost, over a potential mileage or time life set up on a basis of experience data, giving proper consideration to obsolescence and other factors discussed in this paper.

It is needless to elaborate on the importance of sizing up the purveyor from the standpoint of

(1) service availability and cost.

(2) probable permanence as a manufacturer of trucks.

BUT there is one highly important item which I have never seen in a sales manual; and that is the unwritten but I fear not unrecognized principle of salesmanship "Put the customer under obligations to you!" There would seem to be more than one approach in the application of this principle. . . . One of these, however, leaves no headachey customer painfully thumbing the dictionary to brush up on the meaning of those imposing Latin words "Caveat Emptor"; rather it leaves him with a definite feeling of obligation because of worth-while advice and services rendered.

There are salesmen (and may their tribe multiply) who have schooled themselves vocationally into a position of being able to intelligently discuss the operator's problems in his own language; not merely to expound the virtues of their wares, but also to so insinuate themselves into the customer's confidence and respect as to be welcomed as co-operators, not peddlers. Such salesmen—men who keep up-to-date on transportation problems, men who can present a refreshing and enlightening outside point of view, and who are fact-finders first, salesmen afterwards, perform a genuinely useful function in the industry. They are purveyors of transportation who deserve from both buyers and manufacturers more recognition than they receive. If there were more of them, truck salesmanship would become relatively painless. As for the rest —I think no one would object should they care to jeopardize their amateur standing by throwing away their carpet slippers and finding out what it's all about.

Another factor worth consideration in determining upon make of vehicle to purchase is that of the manufacturer's policy relative to interchangeability of parts and units as between models in the line, and in the design of new models. In fleets wherein unit replacement can profitably be included in the maintenance system this point is of considerable importance, for obvious reasons.

Furthermore I believe that the buyer should give careful consideration to the manufactures reputation for sound progressiveness. Many an important detail has leaped, unblushing, from the drawing board to the assembly line, without even the courtesy of a bow to the experimental department. On the other hand some manufacturers, over a period of years, have been so insensitive to trends of buyer appeal as to consistently lag behind the parade, un-alert to demands for lighter weight, greater breaking area, faster engine speeds, more torque per cubic inch, seemingly content to coast along in the doubtful security of that vague and fragile thing known as buying momentum.

Truck Sales Increasing

The new streamlined trucks of the International Harvester Co., Chicago, have kept its two plants busy for months, the company reports. Particular interest has been given the Model C-30, a 1½-ton truck.

Truck shipments are about double last year's volume, it is announced, and last year's registration figures show that 27½ per cent of all new trucks registered in the heavy-duty capacity (two tons and up) were Internationals.

A new streamlined tank truck recently put into operation by the Home Oil Co., of Passiac, N. J. The 5-ton chassis has a 210-inch wheel base and there are 5 compartments in the 1500-gallon welded steel tank. Manholes are concealed in the top and the load can be discharged from either side or from the rear. The truck is equipped with pump, meter, and hose reel

Mileage Per Month Most Important Factor in Automotive Costs

By J. C. Chatfield
N. P. N. Staff Writer

THERE are so many variable items involved that most transportation engineers will not attempt to answer a question as to how much it costs to operate a motor vehicle.

If one should rush in where angels fear to tread and ask the question the automotive engineer quite likely will ask in return, "How long is a piece of string?"

Recently some cost figures have been published covering the operation of a considerable number of salesmen's cars in the light, lowest price field. Humble Oil & Refining Co. recently stated that 212 light passenger cars had been operated 9,887,210 miles at a cost of 3.43 cents per car mile. The breakdown of costs on these 212 cars was:

Expense	Cost per Mile (Cents)
Repairs	0.72
Tires	0.22
Gasoline	1.26
Oil	0.22
Insurance, taxes	0.15
Miscellaneous	0.31
Depreciation	0.55
Total	3.43

Costs of motor vehicle operation vary greatly depending on the number of miles a car is operated per year. Colonial Beacon Oil Co. found that a light car driven upwards of 35,000 miles per year could be operated at a cost as low as 2.5 cents per mile, while the same car making only 5000 miles per year cost approximately 7.5 cents and at 10,000 miles per year a little less than 6 cents per mile.

Of course the skill of the driver and the care he takes of his vehicle make a tremendous difference in actual car-mile costs. Terrain over which a car is driven also affects the cost figure greatly. The car driven in the city costs more per mile to operate than the car of the salesman who does most of his driving over country highways. Almost every item in the cost list, from gasoline to tires, is higher in city driving because of the constant starting and stopping.

As shown in the Colonial Beacon survey, however, mileage per year has the greatest influence on operating costs. This is because of the preponderance of fixed costs such as insurance, taxes, etc., Colonial Beacon found that fixed costs were 53 per cent of the total cost of operating a car.

Table 1 is an attempt to indicate how mileage per month affects costs. In this table esti-

WITH jobbing margins at lower levels, a good many distributors are finding an analysis of their delivery costs reveals a good many places where expenses can be pared. Peddler routes to the farm trade are being abandoned by some jobbers when scrutiny shows them to be losing money. Some jobbers are selecting their customers and scheduling deliveries so that unprofitable trips can be lopped off

The accompanying article attempts to throw some light on the cost of truck operation by developing estimated typical cost tables which may be used by the jobber as a basis for analysis of his own costs.

This 3500-gallon unit is divided into 7 compartments, with turreted streamlined domes. It is equipped with quick opening fill plugs, fill flow vents, 2-inch lines, and a meter installed in a side box connected to the manifold. A tire carrier is built in underneath the tank, and tool boxes are built into the rear of the unit. The truck is painted aluminum

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mated costs per mile are given for cars of the Ford, Chevrolet and Plymouth class operated 1000, 1250, 1500, 2000 and 2500 miles per month.

The table shows that gasoline and oil costs are constant in each column but that all other costs except tires are lower on a per-mile basis as the monthly mileage increases. In the case of tires it is estimated that costs increase as mileage increases.

In this table it is estimated that the car-mile cost of a light car driven 1000 miles per month is 4.438 cents per mile. When the mileage is built up to 2500 miles per month the cost drops to 3.068 cents per mile. The difference between the two figures is 1.37 cents per mile the largest part of which is depreciation which amounts to 0.875 cents of the decrease in car-mile cost.

When it comes to discussing the costs of truck operation even greater variables may be present than in the case of the passenger car. In the first place investment in the truck, its tank and equipment may vary over wide limits. Wages of drivers, license fees, mileage per month and other factors also may fluctuate over a wide range.

Table 2 has been constructed to indicate approximate costs of certain important items and to illustrate how truck costs per mile may be computed from data in the possession of most jobbers. Cost estimates are given on three different types of delivery units, each of which is assumed to operate 2000 miles per month. If mileage falls below this costs will rise as was indicated in the case of passenger cars in Table 1. If mileage is greater than 2000 per month costs will fall similarly.

The unit in the first column is a small tank truck mounted with a 600-gallon tank. The estimated cost of the unit with tank is $1200, of which about $400 would be spent for the tank and $800 for the chassis.

It is estimated that this unit will operate 12 miles on a gallon of gasoline and that it will consume 8 quarts of oil per 1000 miles and that the driver will use six pounds of grease on it per month. It is assumed that the unit is equipped with six 6.50 by 20 tires, costing, with tubes, $22.18 each. These tires are expected to give service for 20,000 miles, giving a tire cost per mile of 0.6657 cent per mile.

Repairs and maintenance on this truck are estimated at 1.5 cents per mile. Insurance is placed at $100 per year, covering property damage and public liability as well as fire and

Table 1—Estimated Operating Cost of Light Cars

	——Miles Driven Per Month——				
	1000	1250	1500	2000	2500
	(Costs in Cents Per Mile)				
GASOLINE					
15 miles per gallon at $0.19 per gallon	1.267	1.267	1.267	1.267	1.267
MOTOR OIL					
5 quarts per drain at 1000 miles, plus 5 quarts make-up at $0.25 per quart	0.250	0.250	0.250	0.250	0.250
REPLACEMENT TIRES AND SPARE TIRES					
Tire size 5.50 x 17. Tire life estimated at 20,000 miles per five tires. Replacement tires figured at $7.50 each. Tire repairs included at $0.50 per 1000 miles	0.130	0.140	0.155	0.170	0.185
LUBRICATION, WASHING, POLISHING, ANTI-FREEZE					
Complete lubrication each 1000 miles at $1. Washing at $1 per month. Polishing $3 per year. Anti-Freeze $3 per year	0.250	0.220	0.200	0.175	0.160
MAINTENANCE					
Repair labor and parts plus accidental repairs not amounting to more than $50. Costs accumulative for total operating period	0.400	0.400	0.350	0.350	0.350
INSURANCE, LICENSE AND OTHER FIXED COSTS					
Insurance to include Fire and Theft, Public Liability and Property Damage. Collision coverage with $50 deductible clause. Total insurance $36 per year. License $12 per yr. Storage $24 per yr. Property taxes $10 per yr. Total all fixed items $82 per year	0.683	0.547	0.455	0.342	0.273
DEPRECIATION					
Average retail cost price of cars enumerated $680. Average trade-in value at end of second year $330. Net write off $350 per two year period, or $175 per year	1.458	1.167	0.972	0.728	0.583
Total Cost (cents per mile)	4.438	3.991	3.649	3.282	3.068

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The proved, short-cut to SIGHT-VALUE lies in the individual character of truck-tank equipment — the self-admitted advertisements of the company's Pride, Position and Prestige.

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Table 2—Estimated Operating Costs for Tank Truck Operation

(Assumed Mileage 2000 per Month—Costs in Cents Per Mile)

	1½-Ton 600-Gal. Tank	2-Ton 1000-Gal. Tank	3-Ton 2000-Gal. Tank
Gasoline, 19 cents per gallon	1.5775	1.9000	2.3750
Motor oil, 25 cents per quart	0.2000	0.2500	0.3000
Grease, 25 cents per pound—driver to lubricate	0.0750	0.0875	0.1500
Tires (6 tires per truck, estimated life 20,000 miles)	0.6657	0.8502	1.7952
Maintenance and repairs	1.5000	2.0000	3.0000
Insurance (fire, theft, property damage and public liability)	0.4165	0.4796	0.7296
Driver's wage ($100 per month)	5.0000	5.0000	5.0000
Depreciation (truck at 33 1/3% per year, tank at 20% per year)	1.4445	2.2780	5.9720
Total (not including license fees, taxes, supervision, etc.)	10.8792	12.8453	19.3218

theft. The driver's salary is estimated at $100 per month, although in certain areas this figure will be considerably higher.

On the basis of only 2000 miles per month, with the driver's salary at $100 charged entirely to the vehicle, the cost is 5 cents per mile. Labor is always a big cost in operations. One contract trucking concern in the southwest, which operates its tank trucks as bulk hauling units between refinery and bulk terminals, running 230 miles per day on the average, reports a drivers' wage cost of 2.1615 cents per mile. The average tank truck in delivery service from bulk plant to service station or from bulk plant to farm trade will not make anything like 230 miles per day.

Depreciation in the table is figured at the rate of 33 1/3 per cent per year on the chassis and 20 per cent per year on the tank. This figure of 1.4445 cents per mile would be lessened as the mileage per month is increased.

No provision is made for license fees on the truck since these vary so greatly in various states. In Oklahoma this unit would pay a fee equal to 0.5 cent per mile traveled for the license tag and 0.5 cent per mile as a motor carrier tax. Therefore, in this state one cent per mile should be added to the total of 10.8792 cents to cover these tax items, bringing the total to 11.8792 cents.

The second column represents approximate costs on a somewhat larger truck mounted with a 1000-gallon tank. It is estimated that this unit will obtain 10 miles per gallon of gasoline, will consume 10 quarts of oil per 1000 miles and that the driver will use 7 pounds of grease per month. Maintenance and repairs are estimated at 2 cents per mile.

It is assumed that this truck will be equipped with six 7.00 by 20 tires which, with tubes, will cost $28.34 each and give 20,000 miles of service, at a cost of 0.8502 cent per mile.

Insurance on this truck is estimated at $115 per year and depreciation at $15 per month on a tank costing $900 and $30.50 per month on a chassis costing $1100.

The cost of operating this unit 2000 miles per month is placed at 12.8453 cents per mile, exclusive of license fees which will run up to 1 cent per mile in some states.

The third column in the table is a calculation based on a very modern 2000-gallon unit with stream-lined skirting and falsework, provided with the latest type of equipment and costing about $5500. Of this about $2500 would be the cost of the chassis and $3000 the cost of tank and added equipment.

It is estimated this unit will run 8 miles on a gallon of gasoline, consume 12 quarts of oil per 1000 miles, and take 12 pounds of grease per month. Maintenance and repairs are estimated at 3 cents per mile. Insurance is estimated at $175 per year.

It is assumed the unit will be equipped with six 9.00 by 20 tires costing, with tubes, $59.84 each and capable of giving 20,000 miles of service. Depreciation on this unit goes up to $50 per month on the tank and accessory equipment and $69.44 per month on the chassis.

The per mile cost is placed at 19.3218 cents on the basis of operation of 2000 miles per month. License and tax fees are to be added to this.

In the Mid-Continent field, some operators of bulk hauling units find it most profitable to operate 2000-gallon semi-trailer units pulled by a low cost tractor. Operating on a 24-hour schedule these contract haulers find their costs to be around 11.75 cents per truck mile.

One contract hauler operating this type of semi-trailer unit of the cheapest possible construction has found his costs to be as follows:

	Cents per mile
Gas, oil, grease, tires, repairs, etc.	7.48
Drivers' wages	2.16
Depreciation	1.33
Miscellaneous	.78
Total	11.75

These units make about 6 miles per gallon of gasoline. The repair cost is about 1.4 cents per mile.

New Truck Tire

A 40 per cent greater contact area, said to bring greater resistance to wear and better nonskid qualities, is a feature of a new low pressure tire specially designed by the B. F. Goodrich Co., Akron, Ohio, for half-ton, 112-inch wheelbase trucks. Riding and cushioning qualities are said to be much better than earlier types because the air pressure is supporting the load.

The "Commercial 15," as it is named, is designed as nearly round as possible so the air pressure—from 15 to 24 pounds—will be exerted equally in all directions, thus providing the greatest amount of deflection. The tire is sized for a 15-inch diameter wheel with standard rim.

Brown Reorganized

Brown Sheet Iron & Steel Co., St. Paul, manufacturer of Brown "Certified" truck and trailer tanks and a complete line of oil, water and gasoline storage tanks, has been reorganized after a period of receivership and new directors have taken control, the company announces.

MODERNIZE WITH THE PACE MAKERS OF MODERN TRUCK TANKS

AIRFOIL STREAMLINED TRAILOW-TANK AND FLOATING LOAD TRUCK TANK

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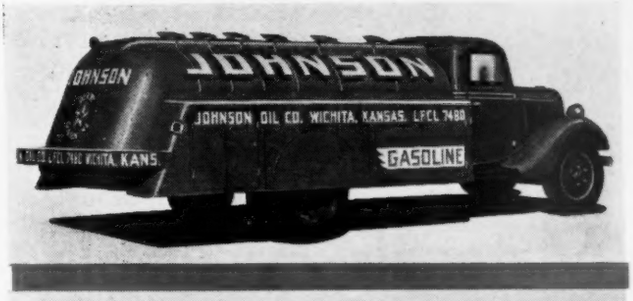

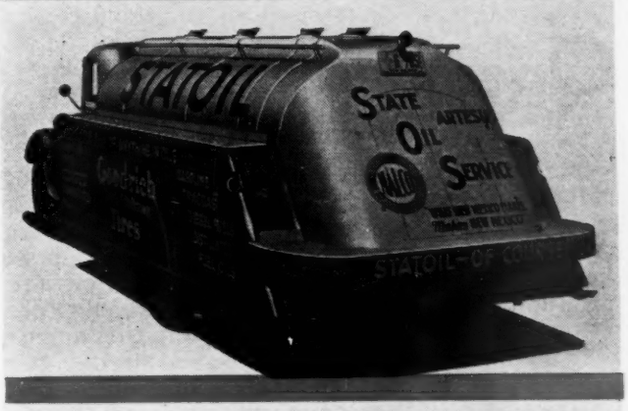

"The smoothest looking transport units on the highways". That's what oil men in the East and in the West are saying about Butler Trailow-Tanks and Floating Load Truck Tanks.

Airfoil Streamlined for both beauty and speed, their smart, trim lines and speed eager turns slip smoothly along—foil air resistance—make higher speeds easier and safer with no increase in power nor operating costs.

And, Airfoil Streamlining goes still further. Weight saving is engineered into the units at every possible place. Such fundamental engineering advancements as the turreted expansion domes, flush fill openings, new low oval tank shape, bi-flex floating load mounting and other hidden values have made possible in Butler tank units and in Butler only, greater strength per pound of weight, less deadload, lower, safer roadability than was ever before possible.

Butler transport units give you the distinctively modern equipment which it takes to impress a motoring public traveling in trim, smart, fast motor cars and demanding gasoline and oil to match, and, at the same time enable you to cut your transportation costs.

GET THESE TWO BOOKLETS BEFORE YOU BUY ANY HIGHWAY TRANSPORT UNIT

In them are shown 47 photographs of the latest, most highly engineered and fastest selling highway oil transport units on the market. Full details and facts are given about Butler units of steel, Aluminum and the new high tensile or "extra strength" steels. Write, wire or phone if your copies have not reached you.

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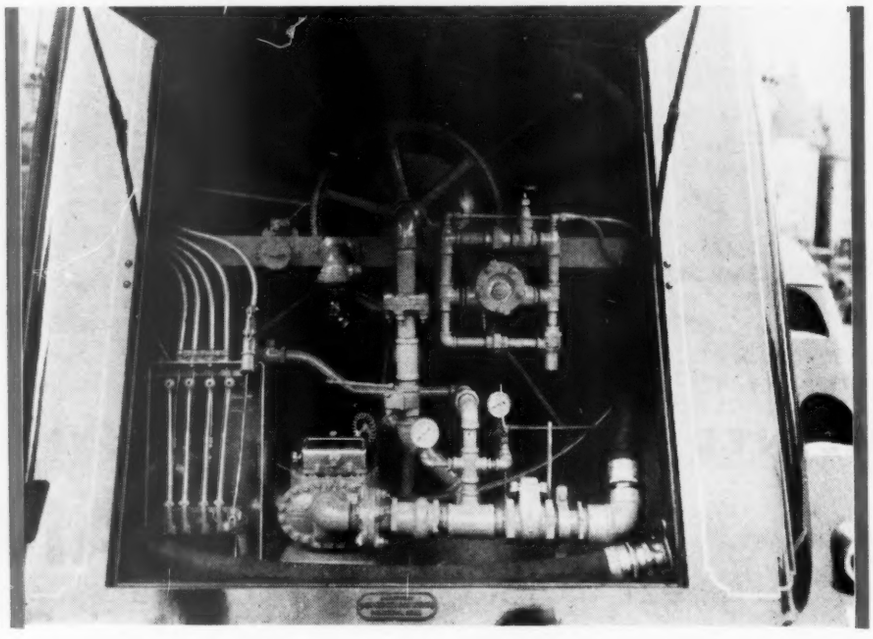
Rear view of an F. D. Koehler Co. fuel oil truck, showing the power driven hose reel



New Tank and Piping Materials Available To Reduce Truck Operating Costs

IT IS perhaps elementary to mention that the gross weight of a loaded truck consists of two things—dead weight and pay load. However, an understanding of the extent to which dead weight can be reduced and payload increased without adding to the gross weight is not so elementary.

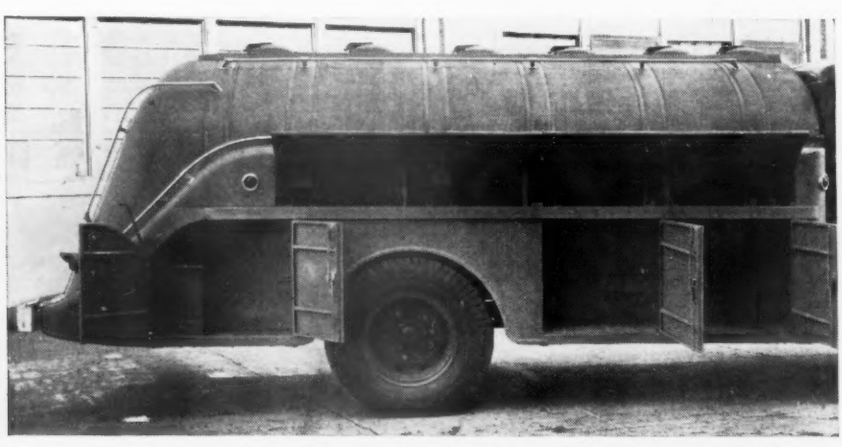
The introduction of aluminum as a tank material a few years ago proved that weight reduction really was a factor in lowering operating costs. Since that time the interest in lighter tank materials has increased and with that interest have come new developments in other lighter weight products for truck tank construction and also for truck fittings.

Among these are the new high tensile steel, a lighter aluminum alloy, and tubing of copper, steel and aluminum, which in addition to increasing flow rates materially, contribute greatly to weight saving in tank construction.

The new high tensile steel sheets, although costing about 25 per cent more than the standard blue annealed sheets commonly used in tank construction, offer about a similar percentage saving in weight over the commonly used steel. This high tensile, low-alloy steel is increasing in favor among tank builders and fleet operators as a weight-reducing material. An example of the reduction in thickness of the sheets for tank trucks follows:

	Heads Gauge	Shells Gauge	Weight Reduction
Mild Steel	10 to 11	12 to 14	%
High Tensile Steel	12 to 13	14 to 16	25 to 30

Aluminum, the pioneer in light weight material, now has



This "open door" view of a modern streamlined truck unit shows the generous amount of storage space provided in the skirting and under the catwalk. In addition to the space shown, there is room in the rear housing for a reel of 150 feet of 1⅛-inch hose. The tank is of aluminum, having 6 compartments with a total capacity of 1500 gallons

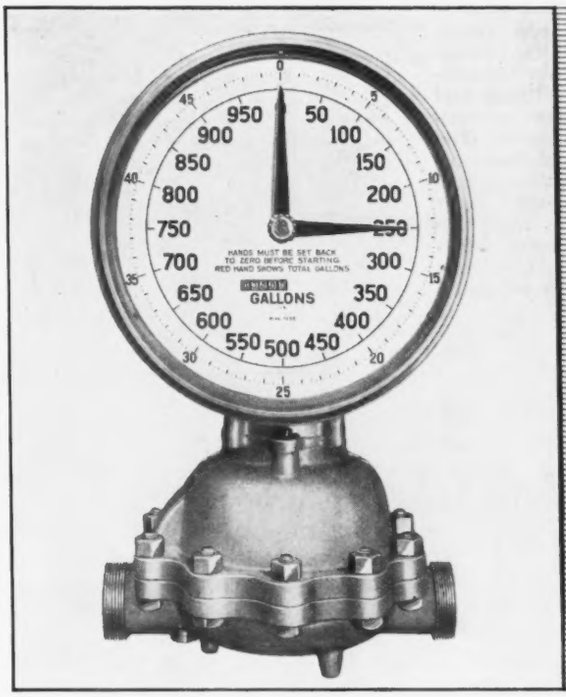
a companion product, a new aluminum alloy which is about 13 per cent lighter than the present aluminum sheet commonly used, and costs about 15 per cent more. Aluminum truck tanks have been built which provide for as much as a 24 per cent increase in pay load without adding to the gross load. Aluminum also offers a good factor of safety in that it will not spark when struck with other material. Aluminum's high reflectivity to light and heat can be utilized by finishing the tank with a clear lacquer or varnish instead of paint. Much of the sunlight will be reflected with the result that the inside of the tank will remain cooler.

The relative weights of a 650-gallon tank of 4 compartments, expressed in terms of the three available tank materials, will offer an explanatory comparison. The tank made of 12 gauge blue annealed steel will weigh about 3150 pounds. The same tank, constructed of high tensile steel, with a 14 gauge shell and 12 gauge heads will weigh approximately 2600 pounds. In 3/16-inch aluminum the tank would weigh 1750 pounds.

Similarly, a 5-compartment 1000-gallon tank made of blue annealed steel would weigh 4050 pounds; in high tensile steel, 3250 pounds; and in aluminum, 2250 pounds.

There are many examples of saving through the use of lighter materials in both tank and semi-trailer construction. The Sun Oil Company was a pioneer in the use of high tensile materials, and have been able to increase the capacity of their 2800 gallon units to approximately 3200 gallons without increasing the net loaded weight of the unit.

An executive of the American Oil Co., of Baltimore, estimates that the nine aluminum truck and trailer tanks in his company's fleet save from $1000 to $1500 in their monthly runs of approximately 4000 miles each —a saving of 25 cents to 37.5 cents per mile for the fleet. In another case the Mexican Petroleum Corp., by using an aluminum tank on a semi-trailer unit, was able to increase the capacity from 3000 to 3500 gallons, which meant 16 per cent more pay load per trip. The unit makes 5 trips per day and the delivery cost is 0.75 cents per



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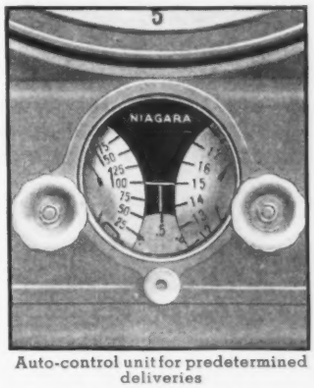
JUNE sixth at Washington, The National Conference on Weights and Measures revised the national standard Specifications for Liquid Measuring Devices to cover meters as used on tank trucks and at bulk plants. Where weights and measures inspections are most strict, you may shortly see these enforced. Rigid requirements of accuracy and dependability are set up,—but Niagara Meters met every demand before the specifications were ever written!

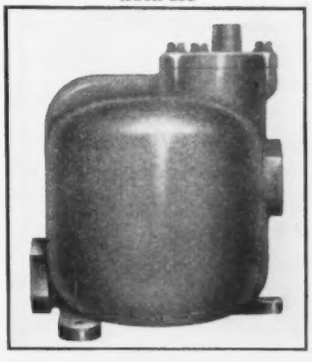
■ Niagara Oil Meters are in the front rank of the 1935 parade of oil equipment. Every available feature that can make them serve you better, is here. The Auto-Control model makes predetermined-quantity deliveries to allow the driver to stay at the hose end, prevents oil floods. Note the new compact Niagara Air Release Valve for truck use. It is small and light and low in price, but not cheapened. The air venting mechanism is exactly the same as in the larger size Niagara Air Release Valve, that still sets the standard of efficiency.

■ When you want up-to-date, simple, accurate, **practical** meters, come to Buffalo!



Auto-control unit for predetermined deliveries

Type F air release valve for tank truck use



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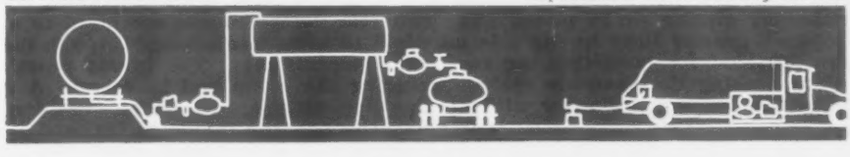

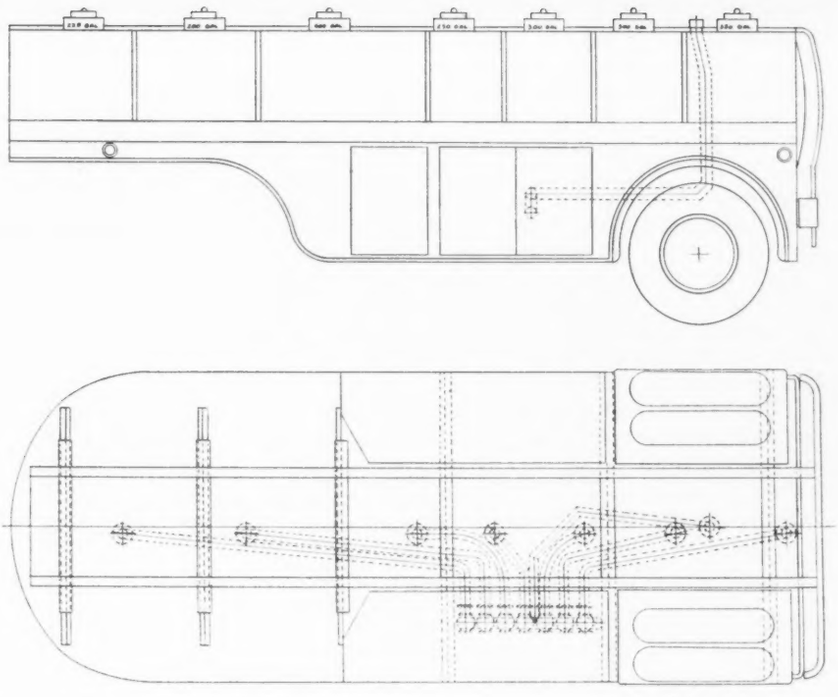

Side and underside views of a 2000 gallon, 7 compartment, drop frame semi-trailer of the Sun Oil Co., showing the piping arrangement for the subsurface filling hook-up. Filling and discharging operations are accomplished through the same lines. The leading pipe is 3 inches in diameter and the loading manifold is 2½ inches. Specifications call for 2¾-inch light weight tube piping running from the manifold to the compartments. Balanced emergency valves, 2½-inch size, are used at the base of each compartment

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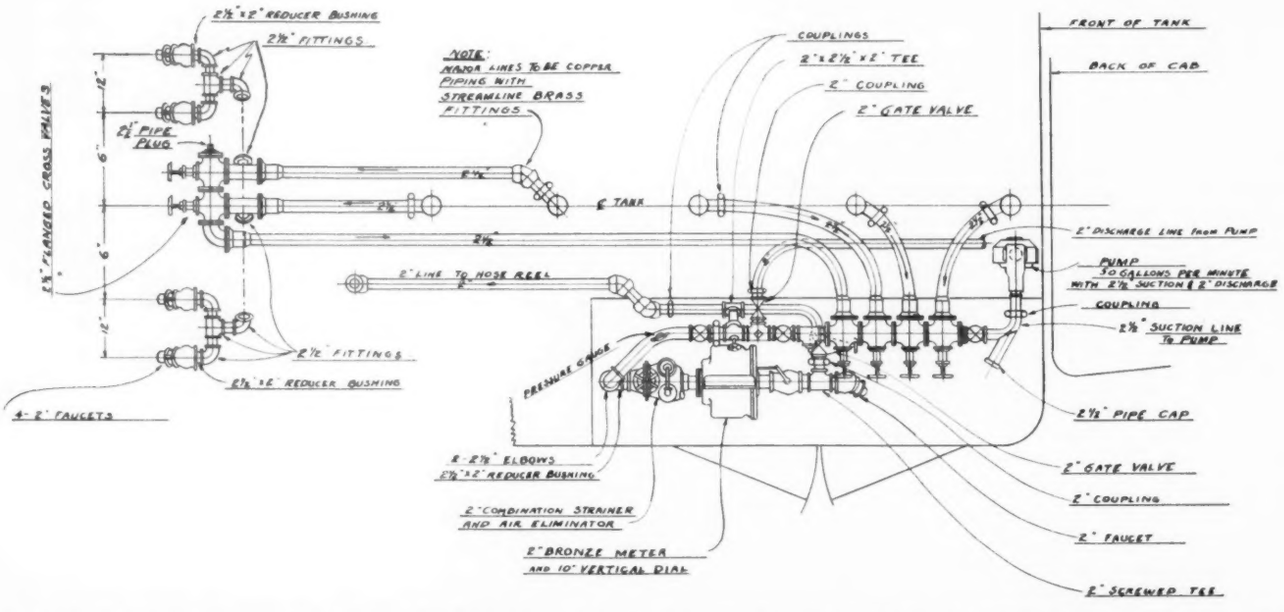
gallon per trip. The extra pay load carried every trip, at no increase in operating costs, amounts to a saving of $18.75 per day.

The Atlantic Refining Co., due to the use of a light gauge aluminum tank, and aluminum fittings, piping, faucets, and cross frames, is able to carry 2200 gallons on the back of a truck having a total gross weight of only 26,000 pounds.

Many new developments are also taking place in the design and installation of tank piping. Streamlined faucets, and aluminum, copper, and steel tubing, are becoming widely recognized as contributors to reduced costs of truck operation, as well as to the factor of weight saving. By using copper tubing, for instance, weights can often be sliced 100 pounds, which, in terms of additional gallons that the truck can carry, becomes a substantial consideration.

However, the primary advantage of these new designs in piping, fittings, and faucets is their ability to speed up flows and thus cut down the time a truck stands idle while discharging its load.

The Shell Eastern Petroleum Corp., in actual tests, has been able to step up its discharge rate on its trucks from a former 50 gallons per minute to 90 gallons



Typical piping arrangement of a Standard Oil Co. of N. J. 5-compartment combination truck tank, illustrating the hook-up for pumping or discharging fuel oil or gasoline by gravity. The system provides for three forward compartments piped to a valve manifold located in the right hand underslung compartment and discharged through meter either by gravity or by pump. The two rear compartments are piped to a rear valve manifold and connected with 2½-inch gravity lines to the side manifold to provide discharge through the meter by gravity or pump. Dual faucets are provided for bucketing the two rear compartments. The layout provides a by-pass around the meter, for use when flushing the complete system including the pump and hose reel. A 2-inch pipe tap fitted with a plug is provided for flushing the meter with its pipe line, fittings, and faucet. The system may also be flushed by gravity without going through the pump, meter, and hose reel

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TRUCK OF VALUE!

Saves gas and oil, lessens wear and tear and assures more power, pick-up and speed.

Now users of trucks in the 1½-2 ton range can get DUAL PERFORMANCE—that revolutionary truck improvement that seasoned operators everywhere have been quick to recognize as one of the few major truck refinements of the past ten years.

Already in the 2-3 ton range, the GMC Dual Performance axle has proved its ability to effect big savings in gas and oil as well as lower maintenance costs inasmuch as there is far less wear and tear on engine and other driving units. Power, too, is more effectively utilized—the truck will climb a steeper grade, travel at faster speeds and handle bigger loads easier. All in all, Dual Performance saves money, saves time, enables the truck to do more work.

Weigh well the importance of this great GMC truck feature. Weigh, too, the importance of every one of the additional 47 cost-reducing features of the GMC 1½-2 ton truck of value, the truck that out-scores each of its chief competitors on many counts—out-scores with such important features as greater payload capacity, higher sustained torque and Lockheed hydraulic brakes with centrifuse drums and unusually large, quality brake linings.

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1½-22 TONS

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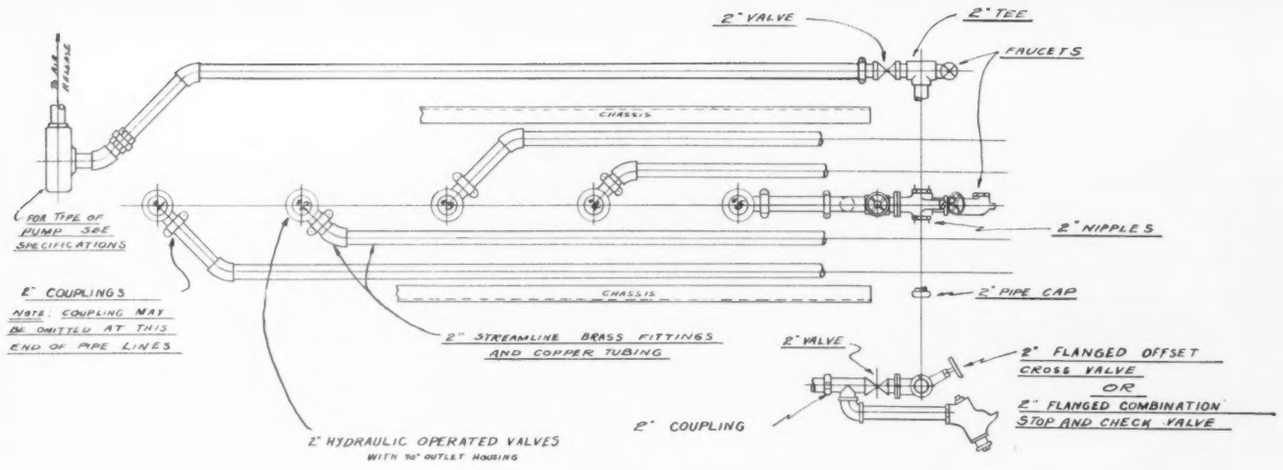

2" VALVE
2" TEE
FAUCETS
CHASSIS
FOR TYPE OF PUMP SEE SPECIFICATIONS
2" NIPPLES
2" COUPLINGS
Note: COUPLING MAY BE OMITTED AT THIS END OF PIPE LINES
CHASSIS
2" PIPE CAP
2" STREAMLINE BRASS FITTINGS AND COPPER TUBING
2" VALVE
2" FLANGED OFFSET CROSS VALVE OR 2" FLANGED COMBINATION STOP AND CHECK VALVE
2" COUPLING
2" HYDRAULIC OPERATED VALVES WITH 90° OUTLET HOUSING

A typical piping arrangement of the rear manifold for a 5-compartment combination gasoline and heating oil tank truck

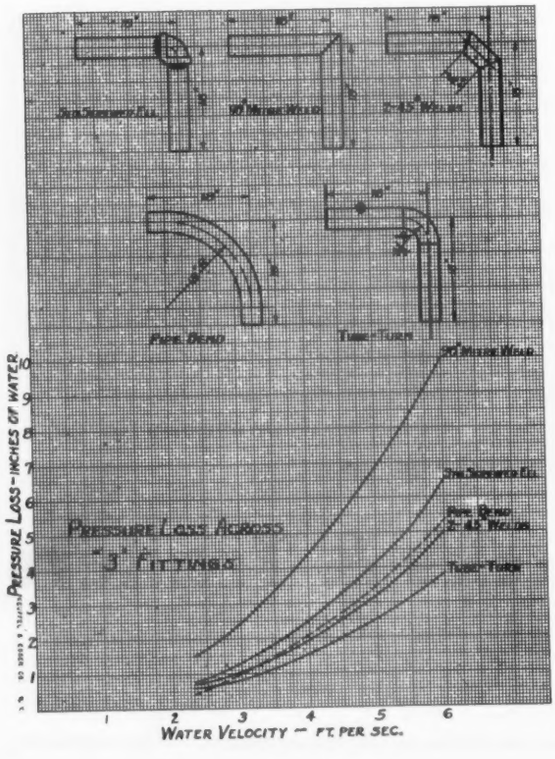
per minute by the use of copper tubing and free flowing bends.

Many of the new streamlined truck units of the Standard Oil Co. of New Jersey are built with six compartments and supplied with combination gravity and pump facilities for fuel oil service in winter and gasoline delivery during the summer. Six lines of 2-inch gravity copper piping lead to the rear of the unit to cross valves with bolted flanges. The bottom outlets of these cross valves enter a welded manifold directly connected by a line to the pump and through the pump to the meter.

The system is devised so that the hose reel can be by-passed and the oil delivered through a faucet and hose direct to the customer's tank, which would usually be done in the case of gasoline. The cross valves also have openings to the rear with nipples connecting the faucets, so that simple gravity unloading may be used. There is also a line from the manifold to the rear with a faucet so that all or any compartments can be drained through it.

By closing certain valves the tank and meter can be flushed of either fuel oil or gasoline at the change of the seasons. The job is also designed so that any equipment unit may be removed, such as the meter, hose reel, or pump.

Since its inception, the subsurface filler has been used by



The pressure losses which occur when a fluid flows through various types of bends and turns are shown in this chart. Note that the greatest loss results when a 90-degree mitre weld joint is used. This study was made by Prof. J. H. Pound, Rice Institute, Houston, Texas

Weight Comparison

Showing the weight, using the three available types of tank materials, of all the elements used in the assembly of a truck tank. The example is a 2000-gallon, 6-compartment tank

(Figures are in pounds)

	Blue Annealed Steel	Aluminum	High Tensile Steel
Heads, 8 ga. steel, 0.240 alum., 11 ga. hi-ten....	984	482	715
Shell, 10 ga. steel, 0.197 alum., 13 ga. hi-ten.....	1498	734	999
Manholes	186	108	186
Finish bands	40	20	40
Sills	162	162	162
Bolsters	420	228	420
Anchor bands	65	39	65
Running boards	139	122	139
Pipe, 2-inch steel tubing Faucets, 2-inch	252	252	252
Splash metal	53	26	53
Mud guards	47	24	47
Pipe rail	40	40	40
Hose carriers (2) tubular	90	54	90
Bumper bar	85	85	85
Lights and wiring	7	7	7
Emergency valves, 2-inch	132	132	132
Miscellaneous	75	50	50
Total, pounds	4275	2563	3482

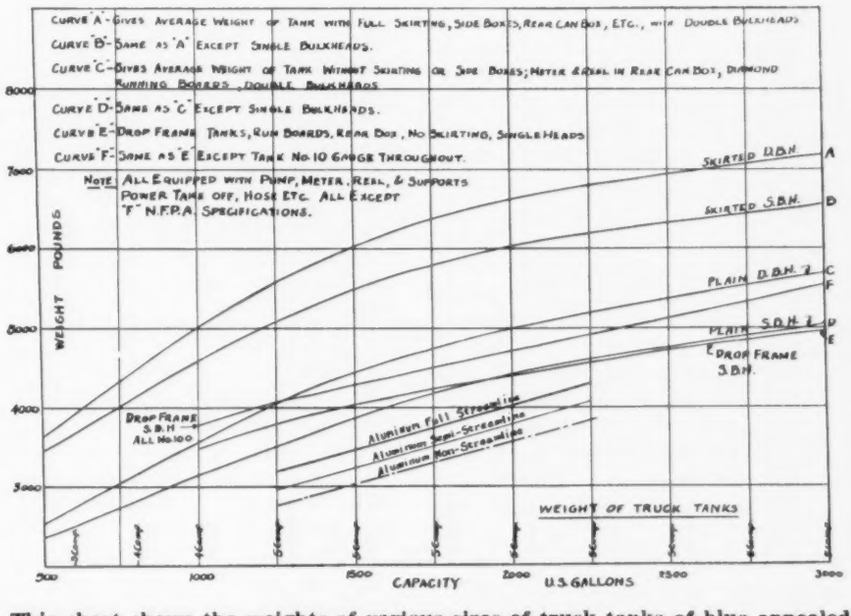
This 3200-gallon tractor semi-trailer unit is equipped with air brakes throughout, with every wheel braking directly from the driver's cab. A safety feature is provided which causes all the brakes to set, if for any reason the air hose connecting the tractor and the semi-trailer become parted or damaged. An auxiliary control mounted in the cab makes it possible to apply the brakes on the rear wheels of the semi-trailer when descending a steep grade. The air brake system is also interlocked with the emergency brake control in the cab, so that in case of an emergency stop air and mechanical brakes are automatically set

the Sun Oil Company in loading trucks below the surface level of the liquid and has been a center of considerable interest. The truck is filled by making a tight connection to an overhead filler which extends down below the compartments of the tank to a horizontal point, either a manifold or trough, and then filling each individual compartment up through the bottom emergency valves. The discharge or rundown being made through the same lines to either a manifold or independent discharge for each compartment. All compartments are filled simultaneously to the proper level without the splashing of any of the material, thus saving considerable in vaporization loss, as against the old method of dropping it down through the manhole of each compartment. It is frequently possible to maintain by this method a loading speed of 450 to 500 gallons per minute.

The advantages claimed for the sub-surface filler are:

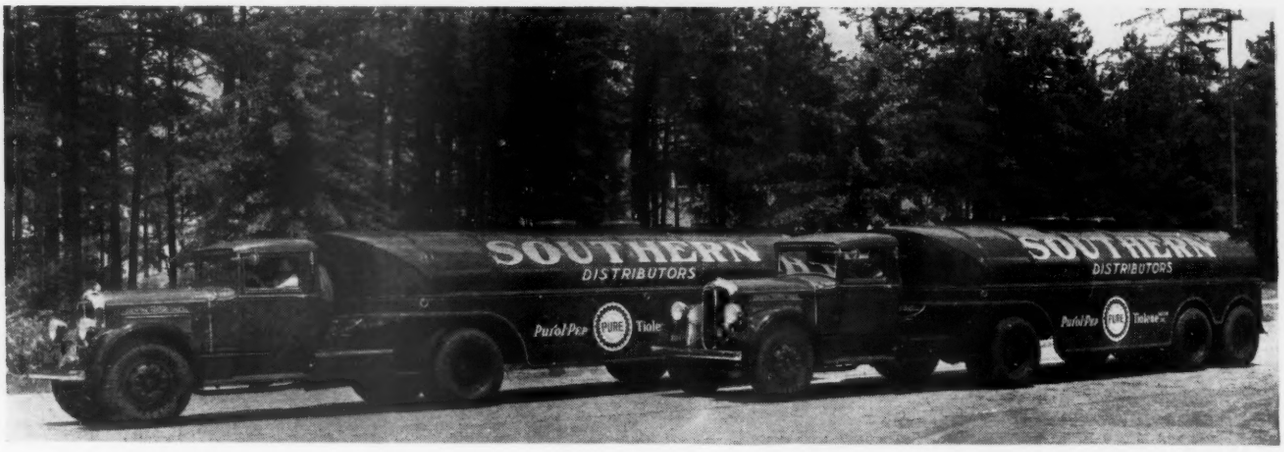
1. Decrease in loading time due to the elimination of the necessity of changing the arm from one compartment to another, and the possibility of maintaining full volume flow from the start of the filling up to the few seconds necessary for topping off.
2. The establishing of one point contact filler arm to the truck making it unnecessary to move the truck or arm during the entire loading process, which with the turn of longer and larger tanks is considerable of a saving in loading rack investment expense or time of shifting the truck.
3. Greater saving in that there is a greatly reduced possibility of static charge due to the tight metallic connection of the overhead filler, although it is advantageous to still use the customary static ground wire eliminator connection.
4. The definite reduction of excessive vapor losses.

Each individual compartment is equipped with its own discharge faucet making it possible to discharge any one or combination of compartments by the simple manipulation of the necessary valve control mechanisms.


CURVE 'A'-GIVES AVERAGE WEIGHT OF TANK WITH FULL SKIRTING, SIDE BOXES, REAR CAN BOX, ETC., WITH DOUBLE BULKHEADS
CURVE 'B'-SAME AS 'A' EXCEPT SINGLE BULKHEADS.
CURVE 'C'-GIVES AVERAGE WEIGHT OF TANK WITHOUT SKIRTING OR SIDE BOXES; METER & REEL IN REAR CAN BOX, DIAMOND RUNNING BOARDS, DOUBLE BULKHEADS
CURVE 'D'-SAME AS 'C' EXCEPT SINGLE BULKHEADS.
CURVE 'E'-DROP FRAME TANKS, RUN BOARDS, REAR BOX, NO SKIRTING, SINGLE HEADS
CURVE 'F'-SAME AS 'E' EXCEPT TANK NO. 10 GAUGE THROUGHOUT.
NOTE: ALL EQUIPPED WITH PUMP, METER, REEL, & SUPPORTS POWER TAKE OFF, HOSE ETC. ALL EXCEPT 'F' N.F.P.A. SPECIFICATIONS.
SKIRTED D.B.H.
SKIRTED S.B.H.
PLAIN D.B.H.
PLAIN S.B.H.
DROP FRAME S.B.H.
DROP FRAME S.B.H. ALL No. 10 G.
Aluminum Full Streamline
Aluminum Semi-Streamline
Aluminum Non-Streamline
WEIGHT OF TRUCK TANKS
WEIGHT POUNDS
8000
7000
6000
5000
4000
3000
500
1000
1500
2000
2500
3000
CAPACITY U.S. GALLONS
A
B
C
F
D
E

This chart shows the weights of various sizes of truck tanks of blue annealed steel and aluminum materials

Fourteen units, of 4000 gallons capacity, are in use hauling gasoline 210 miles from seaboard terminals to inland points in North Carolina. They haul their full loads at night, returning the next day for complete servicing and inspection before starting out again



4000-Gallon Units, On 210-Mile Haul, Make Real Saving Over Rail Rates

By Allen S. James
N. P. N. Staff Writer

CHARLOTTE, N. C.

THE use of large transport trucks for shipment of light oils from seaboard terminals to bulk plants a considerable distance inland has been growing steadily in the southeast the past two years or more, but probably nowhere in that area have such tremendous strides been made as in North Carolina.

A year ago some 7 per cent of gasoline shipments into the state were moved by transport truck, and the bulk of that amount was transported relatively short distances from the seaboard terminals at Wilmington, and at Norfolk, Va.

At present approximately 33 per cent is moved via transport trucks, much of it more than 200 miles inland, and indications now are this will be increased within the next few months as more jobbers become familiar with results already obtained.

Transport trucking is by no means confined to the larger or major companies. There are jobbers who operate only one truck, and there is one jobber who already has a fleet of 14 transport trucks, each of 4000 gallons capacity. The 4000 gallons capacity units come just within the maximum load limit of 40,000 pounds allowed on North Carolina highways.

"Is the transport truck method of shipment paying off in dollars and cents?"

That was the question asked both extremes, the jobber with only one unit, and the jobber who has the 14 units. Here are their experiences:

Dennis E. Myers, head of the Myers Automobile Service Co., at Charlotte, is the one-truck operator. He placed his unit in operation last October, a 4000-gallons capacity tractor and semi-trailer job, with built-in pump unit. He uses the truck only to transport gasoline from terminals at Wilmington 210 miles to his bulk plant and stations at Charlotte.

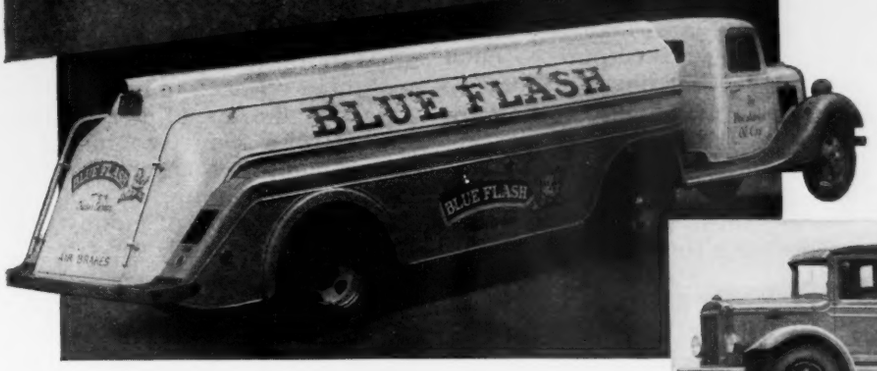
The rail freight rate from Wilmington to Charlotte is 2.18 cents a gallon. Mr. Myers has found he can operate his unit at a total cost of 1.5 cents a gallon. That includes depreciation, insurance, in fact everything that sound bookkeeping requires. And it must be kept in mind that Mr. Myers cannot afford, with only one unit, to keep a mechanic. His maintenance costs, of necessity, will run slightly higher than those of the large fleet operator.

There is a savings in freight for Mr. Myers, therefore, of 0.68 cent a gallon. But that isn't all. He has found that in the winter months, the truck has enabled him to show a savings of $150 to $200 a month in evaporation and "outage" losses and he estimates these savings will be more during the summer months.

The truck can make the run to Wilmington in about six hours. It requires about eight hours for the return trip. Loading and making the return trip all at night, there is little chance for sufficient change in temperature to cause losses.

This truck unit also is so designed that it saves its owner several cents in motor fuel costs on each trip. The tank is in 600 gallon compartments, except for the front one. In it has been placed a bulkhead, and instead of using fuel from the conventional tank, fuel for the engine is taken directly from one of

STRICTLY FROM *Your* STANDPOINT



Left: Modern, streamlined Fruehauf Tank Trailer attracts favorable attention wherever it goes.

Below: Fuel Oil is being hauled in Semi-Trailers, for both home and factory deliveries, with huge savings in delivery costs.

IS THERE anything you'd like better than to have a salesman come in and offer—not just a product——but a practical suggestion enabling you to definitely cut expenses?

When a Fruehauf representative approaches you, he holds this thought constantly before him. The question in his mind is not: "How can I sell a Trailer," but: "How can I cut hauling costs for this prospect?"

WITHOUT LIMITATIONS

He looks at *your* problem strictly from *your* viewpoint. Fortunately, the flexibility of Fruehauf Trailer equipment enables him to do this. Our man comes to you without any arbitrary, preconceived notion about the size of load you should haul. He hasn't any power unit limitations to hamper him. He is able to help you take full advantage of every opportunity presented in your particular situation.

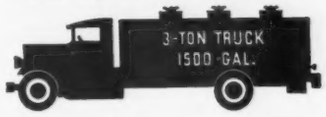
In short, the Fruehauf man does not try to make your haulage problem fit Fruehauf Trailers, but engineers a Trailer to meet your needs. Result—*the utmost in gallonage at the very lowest operating cost.*

MODERNIZING FOR ECONOMY

Now, you may feel that you have already investigated the possibilities of cutting haulage costs (since it is of such major importance in your business) and have taken every step possible to reduce this expense to the minimum.

Still, as an aggressive executive intent on keeping your business on top, you will be interested in the latest haulage developments as shown by the following example:

THIS $3500 UNIT TAKES THE LOAD TO MARKET AT .0100 PER GALLON OPERATING COST



An ordinary 3-ton truck will cost you, on the average, $3500. Hauling 1500 gallons, the operating cost per gallon will be possibly .0100. (Naturally this will vary with different operations.)

But.. **THIS UNIT, COSTING ONLY $2500, TAKES THE LOAD TO MARKET AT ONLY .0060 PER GALLON OPERATING COST**

But—a Fruehauf Semi-Trailer and 1½-ton tractor unit will only cost you about $2500, and will actually deliver 1500 gallon loads, with the same set-up, for *only .0060 per gallon operating cost!* Think of it! This means a saving of 4/10 of a cent per gallon!

And this figure isn't mere theory. It is based on today's costs—in average operations. If yours is an ordinary set-up, the same proportionate saving of 40% will apply. And that's why, during the last eight years, there has been a peaceful revolution in the Oil Industry. For the first Oil Trailer was put into service, as an experiment, just eight years ago. *Today there are thousands of them in action!*

OTHER ADVANTAGES

Still looking at things from your viewpoint, it should be noted that tractor-Fruehauf Trailer units offer you other definite advantages over straight truck operation, including *greater flexibility.* These units, "hinged in the middle," can be turned in a shorter radius, maneuvered more easily in traffic, and parked or "spotted" more readily in close quarters than a straight truck of equal capacity. And you get increased safety—due to better weight distribution and a lower center of gravity . . .

These and other Trailer advantages are described in detail in Fruehauf literature prepared especially for men in the Petroleum Industry. Read this literature over—judge for yourself. Sent free on request.

★

Oldest and Largest Manufacturers of Trailers

FRUEHAUF TRAILER COMPANY

10962 Harper Ave. . . Detroit

Sales and Service In All Principal Cities

FRUEHAUF TRAILERS

"ENGINEERED TRANSPORTATION"

—Reg. U. S. Pat. Off.

the "sub-compartments." Mr. Myers buys all of the fuel for the truck in Wilmington, eliminating the necessity of buying along the road, at increasing prices the farther the truck rolls from the seaboard terminal.

Mr. Myers originally planned to use the truck for deliveries direct to his stations in Charlotte but found its size made it inconvenient. However, with the pump unit, capable of loading or unloading at the rate of 70 gallons a minute, he finds it more convenient to use the large truck as a temporary "bulk plant" and to pump direct from it into the smaller tank trucks for station deliveries.

And now how about the man who really has gone into the transport truck business in a big way.

He is R. L. Brinson, independent jobber at High Point, N. C., operating the Southern Oil Co., with eight bulk plants and numerous retail outlets in the west central area of North Carolina.

Mr. Brinson thought about a year ago he saw possibilities in transport trucking and accordingly bought two 4000-gallon units. It was not long until he added more units, until today he operates 14, has a regular truck terminal at Wilmington, employs 30 truck drivers, four mechanics, two truck washers and a supervisor.

Not only does he truck a major portion of his own requirements from the Wilmington terminals, but also under contract considerable quantities for two other large operators in North Carolina.

Mr. Brinson's folks were "railroad people" down in Georgia, and he was operating eight and ten coach passenger trains when less than 21 years of age. It is only natural that he apply to trucking some of the lessons he learned as a "railroader."

The Southern's transport trucks run on a schedule virtually as exacting as that of the railroads. Each night about 11 the trucks are loaded at the Wilmington terminals, each with a certain destination.

Shortly after 7 the following morning those trucks begin arriving at destinations. They are unloaded, and new drivers take charge and head the empty trucks back toward Wilmington.

BY 1 or 2 in the afternoon the trucks begin arriving at the Wilmington "shops." And at 2 the four mechanics, the two wash men and the supervisor go on duty.

Each truck is serviced completely and inspected which means the unit is given this complete inspection and servicing approximately every 400 to 450 miles.

Under this system, Mr. Brinson says, the trucks have been able to operate at approximately 90 per cent efficiency. The 10 per cent loss, he explained, was due to breakdowns which occur occasionally in spite of the most careful inspections; and to the bulk plant requirements. Occasionally full loads are not required at a bulk plant, due to slackening off in retail demand, and some delay is caused when a portion of the load is "diverted" to another plant.

While there are some disadvantages to this method of delivery to bulk plants, Mr. Brinson explained, the advantages far outnumber them. He has found, in his own case, tremendous saving in evaporation and outage losses, just as has Mr. Myers at Charlotte. Inventories do not have to be as great, and the transport truck gives considerable flexibility to bulk plant operations.

"Before the terminal was built at Wilmington," Mr. Brinson explained, "I used to have to buy a train load of gasoline at a time from Group 3 just to insure a steady supply for just a little company like mine, that meant a sizeable amount of money tied up in inventories all the time.

"Now, if aboat is not in or is delayed slightly and the plants in the field are low on stocks, we can shoot them enough to hold the mover, and do it a lot quicker than the rails could load the tank car and get them to us."

Mr. Brinson was reluctant to reveal his actual operating costs, but did say that, if the railroads in North Carolina actually did reduce petroleum rates 25 per cent as they had threatened, he still could stay in business and have a little to mark on the profit side of his truck operations.

Mr. Brinson believes the large transport units are the most profitable in the final analysis.

"Some operators have units hauling about 2500 gallons," he explained. "The revenue from a load carried by one of the 4000-gallon units is more than half again the revenue from the smaller load. But I have found that the cost of operating the big unit is not half again as much as the smaller one."

An oil marketer in Charlotte found that, operating only the 4000-gallon capacity unit shown above, he could save 0.68 cent a gallon on his hauls from seaboard to his bulk plant

There are 9 Internationals now working for the Home Oil Co., Passaic, N. J. Two 4 to 5-ton Model C-60 Internationals like the above have recently been added to the fleet.

You Can CUT YOUR HAULING COSTS with the New INTERNATIONAL TRUCKS

YEAR in, year out, America's most prosperous fleet owners —large and small—keep accurate cost records on each truck they operate. On the basis of their own cost figures, more and more of these well informed operators are standardizing on International Trucks when replacements or additions are in order.

From ½-Ton to 10-Ton—regardless of size or model—Internationals set the standard of dependable low-cost hauling. Whether that cost be figured by the mile, the gallon, or the stop.

The proof is yours for the asking. And the more questions you ask the surer the proof. The nearest Company-owned branch, or International dealer, will give you complete information.

INTERNATIONAL

Ask about the popular 1½-ton, 6-cylinder Model C-30

$595

f.o.b. factory

for the 133-in. wheelbase chassis, standard equipment.

Also available for special needs, the 1½-ton 4-cylinder Model C-20, chassis prices as low as

$575

f.o.b. factory

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. OF AMERICA (Incorporated) **Chicago, Illinois**

INTERNATIONAL TRUCKS

Selecting and Training Motor Vehicle Operators

By J. F. Winchester*

There is greater necessity now than ever before for the proper selection and training of operators of oil delivery motor vehicles, due to the speed with which traffic now moves on the streets and highways, the number of drivers who are not fitted to handle cars and so on, the author brings out in the accompanying article. It consists of excerpts from an address recently given in the east before superintendents of motor truck operations in many lines.

The man operating an oil truck carries a greater degree of responsibility also because of the nature of his load, it is brought out, and he should be familiar with local ordinances of all kinds relating to the handling of hazardous material. The selection of the proper type of operator and his training is equally important to the oil company because of his constant contact with the customers for his company's products. The author has had many years' experience with the operation of one of the largest fleets of motor vehicles in the world, but his remarks apply equally to the company operating a small mumber of trucks.

This paper was given recently at a safety meeting of the Philadelphia Chamber of Commerce.

* * *

ORGANIZED industry, as I see it, is playing a very valuable part in the reduction of accidents through taking the most modern means of selecting and training operators. We must not lose sight of the fact that the status and duties of these men of today is entirely different from those of the simple, rough days of early commercial vehicle activity. At that time, a good strong man who had some knowledge of the vehicle was selected as the best material available for doing a job of this kind.

If we look at the situation carefully today, it will be seen that the title of "Driver" is now a misnomer. He has become an operator. He operates the mobile end of commercial business. Along with general salesmen he contacts the customer. This varies considerably with the commodity being handled. Nevertheless, it holds, to a degree, in any line; for the operator is continually before the public eye and in that position can do immeasurable harm or good to one's interests.

Many concerns train him more carefully along the lines of knowing the product and particularly to sell the goods and collect money for them.

The man selected for this work is generally speaking one of high intelligence. The necessity for him having a high degree of intelligence can be best visualized when we consider that he is the most frequent contact which the firm has with the customer. Therefore, he not only has the problem of delivering and selling the goods, but the more important duty of actually being the outstanding commercial representative of the concern handling a given commodity.

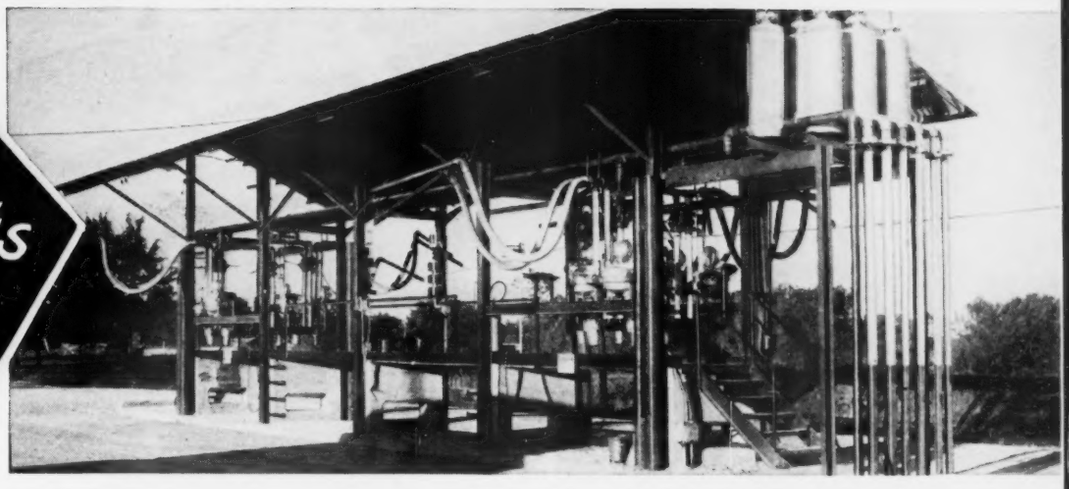
The responsibility of a carefully operated fleet of vehicles rests first with the business concern buying them. The concern in question may have a variable outlook towards this responsibility of operation upon the highway. But generally speaking, I have come to the conclusion that the majority of fleet operators today consider it an asset to give thorough and careful thought to the selection of equipment and operators. They purchase the vehicle to obtain or make a profit in the commercial world, and of necessity recognize that lower insurance premium, repair cost, fewer days out of service, longer vehicle life and constancy of service are all obtained if proper training methods in operation and maintenance are established. They set standards that should be emulated by the general public, and these tend to create in their employes' minds a definite sense of responsibility. This definite sense of responsibility as I see it can be inculcated in the most humble mind.

Well-organized concerns, generally speaking, delegate the responsibility for the operation of their vehicles to fleet managers or supervisors who are imbued with a true sense of responsibility and loyalty that is constantly to be employed to stimulate and direct the minds and actions of those entrusted to their supervision and frequently inadvertently set examples that act upon the minds

*Manager, General Automotive Division, Standard Oil Co. of New Jersey.

At Small Plants Like This

At Large Plants Like This



On Tank Trucks Like This

In Every Case

Bowser Xacto Meters

Definitely Increase Profits By Stopping Losses and Saving Time!

Oil company records show, figures prove, that meter measurement is the most logical, economical and profitable way to handle liquids. Losses can not continue to rob profits when accurate, dependable meters go into service.

Xacto Meters—as many hundreds of users will testify—put a complete, fool-proof check on every bulk withdrawal, on every truck delivery. They prevent those big losses caused by over-measurement, carelessness, etc., often attributed to shrinkage, evaporation, etc. They speed up every movement of liquids—gasoline, fuel oils, etc.—from bulk to truck and from truck to retailer or consumer. They return the small investment required time and time again.

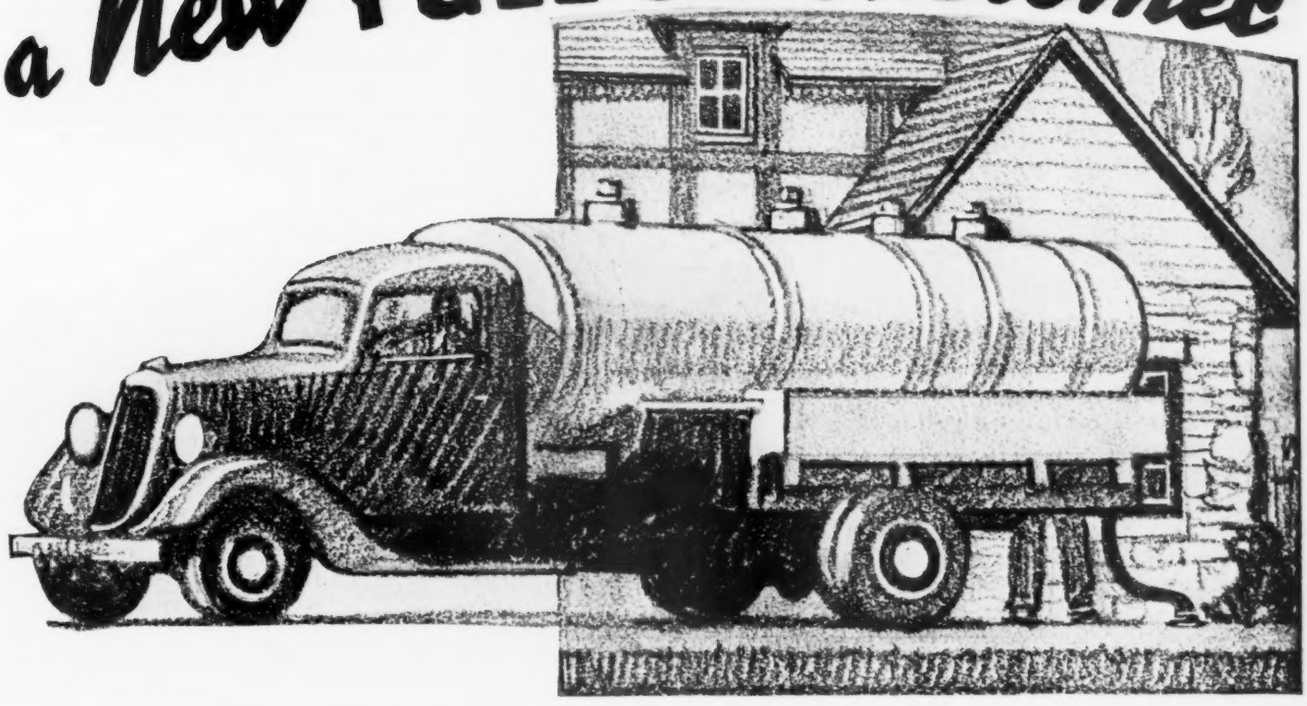
Let a Bowser Meter Man submit full details. Send for descriptive literature and performance facts.

S. F. BOWSER & COMPANY, Inc. **FORT WAYNE, INDIANA**

A Half Century Complete . 1885-1935 . Now A New 50 Years Begun

HART Oil Burners are *different* . . . in addition to all the features found in good oil burners, HART has many exclusive and unusual advantages.

a New FUEL OIL Customer



HART is *low in price* . . . the installation costs are *small* . . . HART requires a minimum of service, because it's *built right* and *stays right* . . . the many HART features and the outstanding HART quality save selling expense because *sales are closed quickly*.

Just as HART took the leadership twelve years ago in pioneering the industry with a *good burner*, so today HART marches alone '*way out in front* with the burner that not only out-performs, outsells, and out-features all existing oil burners, but out-shines them all as a profit maker for the dealer.

Mr. Oil Marketer, here's a message of greatest importance to you . . . because it tells you how to increase your fuel oil sales . . . and it comes to you from the experience of your fellow marketers who are handling HART.

Just as the utilities have found it pays well to build their KW load by the sale of appliances, so have many progressive oil marketers multiplied their fuel oil business with the profitable HART franchise in their communities.

This opportunity is ready for you, too . . . cash in on the quick HART profits and add a new fuel oil customer for every HART you sell.

The oil burner season is here RIGHT NOW. Don't delay. Write, phone, or wire TODAY for the 1935 HART dealer plan. *It's a winner!*

Phone or wire

HART Oil Burner Corporation

Dept. 14 PEORIA, ILL.

A cab-over-engine type of unit which is coming into favor particularly in congested areas. This unit is operated by the Standard Oil Co. of N. J. and has 6 compartments totaling 2300 gallons capacity. The tank is aluminum and has 8-inch aluminum fill caps, inside vents, and full length doors in the bucket box. It is equipped with 2½-inch emergency valves, 2½-inch copper piping, and 2-inch faucets

• • •

of others as illustrated by the above instance.

Among the duties of these men is that of assisting the management in the proper selection and training of men along lines that will permit the operation to function at maximum efficiency in order that the greatest benefit may come to their particular enterprise.

There are no set rules governing the ramifications of these responsibilities. There cannot be, for the commercial field covers many different types of industry. There are private carriers, contract carriers, and common carriers. Activities range from delivery of —oil, tea, bread, packages and milk—to—hauling of, long distance loads, sand and gravel and various bulk-hauling. Moreover, we must not forget the large bus and taxi industries.

It might be well to mention, in a general way, some of the things which come to mind in the specific selection and training of operators.

Granted that physical requirements and general characteristics peculiar to the particular job have been fulfilled, the real training begins. And it should never end as long as the man is employed.

Possibly the point would be clearer, if we described training, which should follow the initial period, as co-operative guidance. Such guidance would cover safety, new mechanical features, employe-welfare, study of accident causes, etc.

Too often men are instructed, initially, and are then left to their own resources with frequent disastrous results.

The operator should be trained to keep his truck in good condition and attractive in appearance. Make it his responsibility. He should inspect his brakes, steering, tires, lights, horn, and windshield wiper, daily. Motor fuel, motor oil and radiator water are the other daily needs. Once a month, or on some other regular schedule, a complete inspection should be made by a mechanic. Operators should report faults and needed repairs.

Safety consciousness should be stressed at all times by suitable placards, letters of instruction and certificates for meritorious operation. Co-operative meetings can be advantageously conducted, at which court investigations are made of past accidents, and ideas are exchanged between the management and the employes.

Score-sheets showing accident averages of each operator, and each division have worked well. Men like the competitive idea.

Bonuses and rewards for good driving have their merits. Some companies feel they are indispensable, while others feel that the men's regular salary and continued employment requires high quality performance.

So far we have seen what the problem of selecting and training of an operator requires in a general way. It may be well to mention now some of the detailed information required in various types of operation.

The oil man must be acquainted with metering and pumping equipment, automatic shut-off valves, fire-hazards, local ordinances and a general mechanical knowledge of all the mechanisms on his truck. A mistake on his part may mean costly damage to the truck or a serious fire. In addition, he must be a salesman, diplomat and we must not fail to mention, an A No. 1 operator.

* * *

The automotive field has advanced by leaps and bounds. With it all has come the extra pressure for driver training. Higher speeds, intricate mechanisms, greater business pressure, etc., have all contributed to the need for exact and thorough methods. Better braking and lighting facilities must be provided. Warning signals are important, for the other fellow is probably traveling as fast as you are. Devices peculiar to each industry must be operated and maintained. All this comes under the head of employer-responsibility.

The degree to which one administers this phase of motor vehicle operation affects and colors the entire aspect of profitable returns and continued success. The public is much interested in what your operator does, and he is watched and checked on, rigidly at all times. The commercial operator is the subject of treatises on accident investigations, magazine articles, safety campaigns, and legislative actions. Let one truck, bus or taxi be involved in an accident, and the whole community is "up in arms". It is a stigma that we have inherited, but which fortunately, is rapidly being overcome. The very matters we are discussing here have been as responsible for this good advance as anything we can recall. Records prove this. Company after company report that, with the advent of more careful selection, training and guidance of their operators, their accident rate has decreased tremendously. Bonus systems and other ack-

nowledgment of commendable service have also helped.

Legislative actions, taxation propaganda and public sentiment are in a critical state and must be recognized.

In general, we may say that the applicant for the position of motor vehicle operator should be selected and trained as follows:

1. He should be sound of body and mind, of middle age—not too young or too old.

2. He should pass physical and road tests. Psychological tests are unproven and therefore questionable at the present time.

3. He should be tested and instructed on all safety rules—of road, local ordinances and company.

4. He should be familiarized with the mechanical features of the vehicles he is expected to operate, their maintenance and repair.

5. He should be familiarized with his load—its selling points, its distribution and precautions.

6. He should be imbued with the idea of efficiency, economy, courtesy and safety at all times.

7. Give him ample opportunity to keep pace with developments, an opportunity to advance and to improve steadily.

8. He should be encouraged, assured and assisted by the management, unceasingly.

9. He should realize the cost of operation, the meaning of an accident and the necessity of always trying to do the right thing.

10. He should be commended when he does right, and counseled with when he does wrong. Let him feel there is co-operation and a universal effort for the common good of the company.

The Standard Oil Co. of New Jersey, through its Esso Marketers, operates one of the largest fleets of motor vehicles in the world and endeavors, unceasingly, to promote management-employe felicity, understanding and collective bargaining. "Collective bargaining" is an excellent summary of the company attitude. It is a healthy state of affairs. The humblest driving position is bound to carry with it some feeling of responsibility and duty to the general company welfare.

Under such working conditions, the employe is happy, free from worry and anxious to do his best to promote efficient operation. He feels it his duty to see that his vehicle is attractive, that he drives it with consideration for others and that his day's work earns maximum dollars. He feels that he is a partner in the business. Continued training and guidance of such men is effortless and unsurpassed. After the initial training, you do not have to tell them what to do. They ask.

Within a year's time after a man is accepted as an operator in the sale of Esso Products, he becomes eligible for various benefits such as: sick, accident, death compensations, medical attention, stock participation, etc. There is the assurance of a pension through the Annuity Plan. There is the "collective bargaining" scheme — joint meetings, Coin-Your-Ideas Plan, educational programs, employe-representation and Industrial Relations Department. It is interesting to note that the NRA Codes prescribed such "Bargaining". The Standard Oil Co. of New Jersey has been practicing it successfully since 1918.

Training the employe is an investment and it is well for any company to recognize it as such. Then, protect and foster the trained employe as you would any other asset. Think what it would mean in dollars, to replace a "ten-year" man. Think of the extra earned dollars that might not be realized if the operator was not instilled with initiative, enterprise, ambition, greater effort and satisfaction.

When one considers the selection and training of men he must realize that no matter how good a man may be when you hire him, he will not continue to render 100 per cent service unless he is kept contented, encouraged and informed of what is expected of him. He must have some feeling of security for himself and his family. He must know that he is working with you and not for you.

The net result of following such a method is exemplified in the Standard Oil Co. where 52 per cent of the Personnel have had 10 or more years of service and many 40-50 years service before retiring.

Such a record makes for an all-round, highly-trained and accident conscious organization that should, in the established order of affairs, protect the general interests of all who are interested in the safe and sane use of the highways.

University of Michigan Announces Courses

The University of Michigan is announcing courses for the coming year in Chemical and Metallurgical Engineering. A number of these courses deal with petroleum subjects and a number of research papers on these same general subjects are listed in the back of the bulletin. Although it is the practice to avoid sharply specialized training in any specific field for undergraduates, graduates are given more specialized work.

The bulletin states that the petroleum laboratory has complete facilities for study of motor fuels, oils, and other petroleum products. These are supplemented by the equipment available in the general chemical engineering laboratory, the fuel research laboratory, and the automobile engineering laboratory.

Eight courses are noted which deal with petroleum subjects. These include Motor Fuels and Lubricants, Petroleum and Motor Fuels, National Gasoline and Compressed Gases, and Petroleum Refinery Engineering.

Ruling on Cleaning Naphtha

CLEVELAND, June 21.—Exemption certificates required in all cases of sales of naphtha for cleaning and industrial purposes, by a ruling of the Bureau of Internal Revenue in April, 1935, have now have been ruled unnecessary in sales to consumers involving $10 or less. Purchases of $10 or less for resale will require a statement executed in the presence of two witnesses, instead of under oath as formerly required, the Bureau reports.

In its normal operation 200 gallons per minute pass through the 3-inch meter on this truck of the Smart's Oil Co., in Waltham, Mass. It is not unusual, however, for this meter to handle 300 gallons per minute. Notice the large air eliminator on the running board just to the left of the cab door

The Effect of Meterized Trucks

By Walter W. Brown*

THE use of meters as applied to truck tank operation, correctly viewed, falls in two classes. First, the use of such equipment in the delivery of domestic burning oils, second, their use in the delivery of motor fuels to the retail station.

There is such a wide difference in the demands made upon the equipment, and the conditions of operation are sufficiently dissimilar that, for a clear presentation, it is desirable to consider the meter requirements for the two classes of service separately.

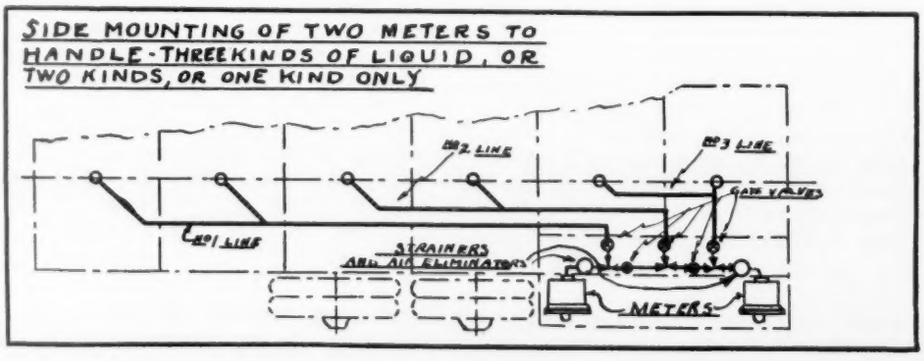
In those marketing areas where the use of burning oils for domestic use has developed to a sufficient extent to become a large percentage of the total gallonage of the marketer, meters are almost universally recognized as a necessary part of the delivery equipment. This recognition has come about largely as a result of the desire of the marketer to provide a greater degree of customer appeal, and a genuine desire to give the customer a greater degree of protection against the chance of error on the part of the truck operator.

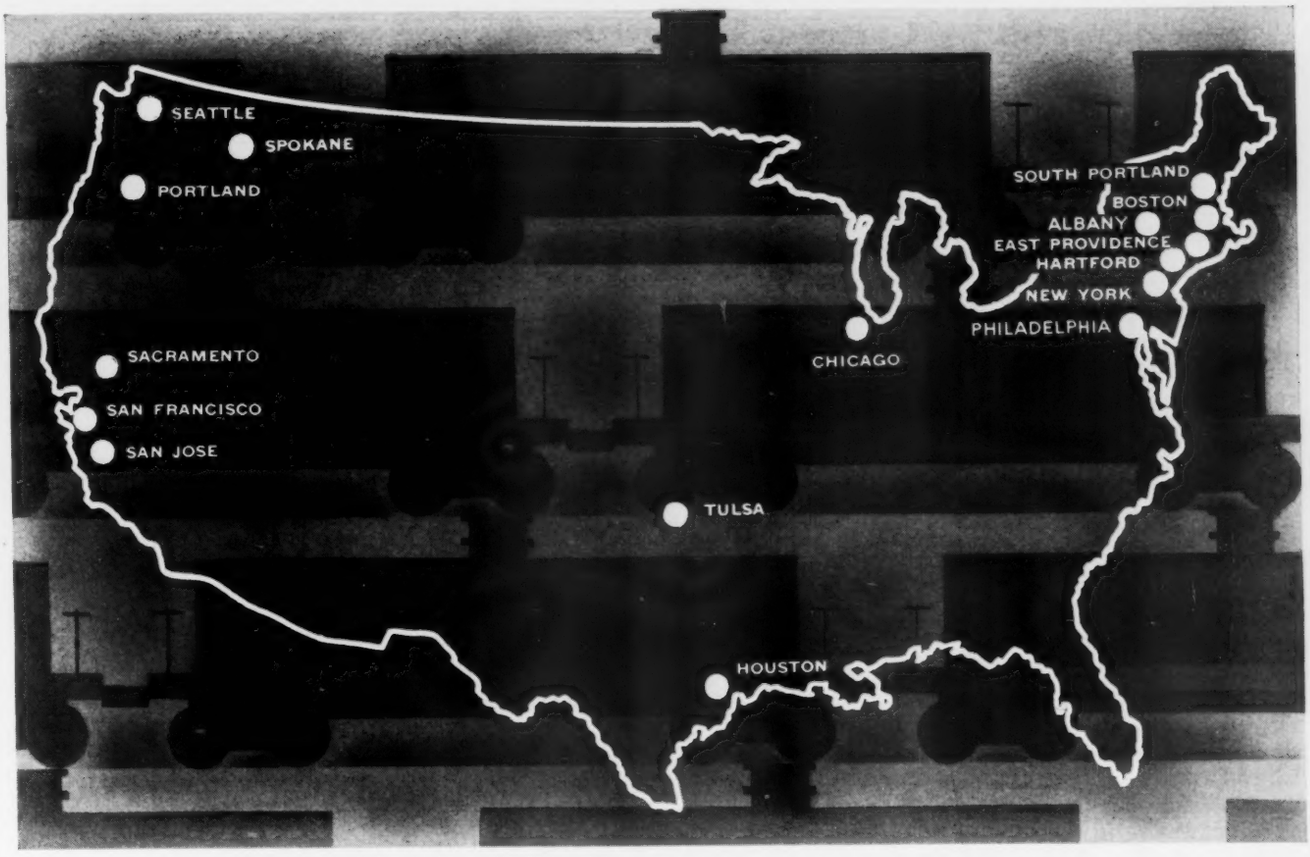
The alert meter manufacturer has kept pace with this demand by providing required added features and improvements over the simple indicating meters first employed for this purpose. Today it is possible to have meters equipped with automatic quantity control devices, so that the driver can set the meter for the quantity of oil required. When this quantity has been delivered, flow will automatically shut off; at the same time printing the amount delivered on the customer's delivery receipt. Also improvements have been made in the air eliminators which obviate the need of back pressure valves formerly needed to obtain accurate measurement. Aside from the added customer appeal, these new improvements greatly facilitate the operation of the truck, expedite the individual deliveries, and avoid customer complaints.

The second phase of the use of meters, the delivery of motor fuels to retail outlets, presents entirely different problems to both the meter manufacturer and the marketer. The meter performs an entirely different service here, in that direct operating economies are effected by its use by increasing the number of gallons per truck mile as well as gallons per truck hour that a given unit can deliver.

The application of meters to gasoline delivery has greatly increased the past few years due to the economic stringency demanding smaller deliveries and more of them, to the end that

* Field engineer, Ralph N. Brodie Co., Inc.


SIDE MOUNTING OF TWO METERS TO HANDLE-THREE KINDS OF LIQUID, OR TWO KINDS, OR ONE KIND ONLY
NO 2 LINE
NO 3 LINE
AIR VALVES
NO 1 LINE
STRAINERS AND AIR ELIMINATORS
METERS



Bell System Teletypewriter Service keeps

TIDE WATER TANK CARS *ROLLING*

Tide Water Oil Co. connects its eastern and western offices by Teletypewriter Exchange Service — typing by wire. Any office in each group talks in type direct to any other in the same group. For centralized control, communications involving both groups flow through main offices at New York and San Francisco.

By teletypewriter, field offices report stocks on hand every day, and tank cars are routed or rerouted to meet changing demands. Price changes are flashed to all offices and local competitive situations reported in return. Information on new customers is typed to headquarters; often credit approval is given on the same connection. Approvals on station leases are similarly secured.

The speed and accuracy of the teletypewriter permit close co-ordination of the company's far-flung activities. Connected offices have identical, typewritten records of every message. Fewer errors. Faster service to customers.

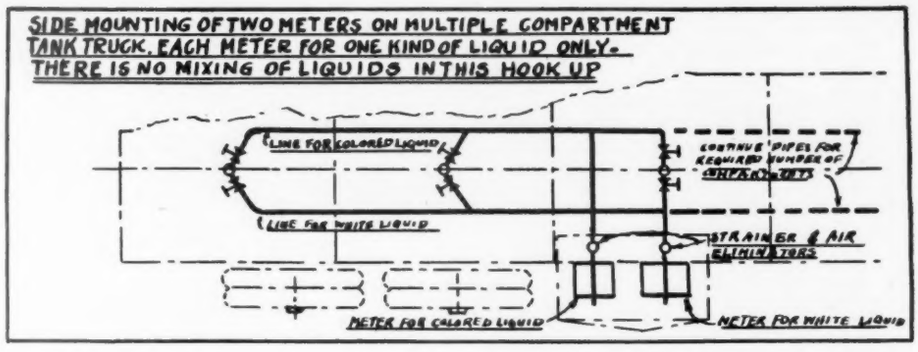
Teletypewriter Service is available on private-line or exchange basis, handles communications on plain paper or printed forms. It is so flexible, so efficient, that it will probably pay its own way in your business, too. Call the local Bell Company.

the total gallonage delivered per unit might not be reduced. This statement is best justified by citing the experience of a national marketer who now is equipping all new trucks with meters. Some three years ago this company notified all agencies that meter equipment for four trucks would be supplied for each truck retired from service. Many of their agencies and branches availed themselves of this offer, and none failed to effect the desired economy. As a result of this experience there is now the general metering policy referred to.

To effect the desired economies that accrue from the use of meters in this service, it is imperative that the meter equipment be such that the flow by gravity be comparable to the normal flows heretofore obtained when meters were not used. Such results are obtainable only when proper attention is paid to the flow characteristics of the meter equipment and the pipe and manifold layout. That such resulting flows are obtainable on gravity trucks is amply proved by many meter equipped trucks that are delivering up to 100 gallons per minute.

The latest and most exacting meter application is the unit which resulted from a desire on the part of the marketer to provide a truck unit that could be efficiently used during the summer for gravity gasoline delivery, and during the winter for fuel oil delivery. For winter use the conventional pump, driven from the transmission, forces the oil through the hose reel and long, small hose ordinarily used in this service.

This so-called combination pump and gravity truck, imposes rather exacting demands on the meter equipment as well as requiring special attention to the piping layout of the truck. The required accessories, such as air eliminators, strainers, and so on to assure meter accuracy under both operating conditions, are relatively recent developments, but they are being successfully used by many marketers operating in those localities where both classes of service are required.


SIDE MOUNTING OF TWO METERS ON MULTIPLE COMPARTMENT TANK TRUCK. EACH METER FOR ONE KIND OF LIQUID ONLY. THERE IS NO MIXING OF LIQUIDS IN THIS HOOK UP
LINE FOR COLORED LIQUID
LINE FOR WHITE LIQUID
METER FOR COLORED LIQUID
METER FOR WHITE LIQUID

Experience on the part of many operators has developed sufficient information to conclusively prove the utility and economy of meter equipment for both fuel oil and gasoline delivery. That this is generally recognized is evidenced by the number of new truck tanks that are being factory equipped with meters, as well as the number of meters that are being installed on trucks already in use.

Canada Accepts Diesel Powered Trucks And Busses Despite Equal Fuel Tax

CLEVELAND, June 22

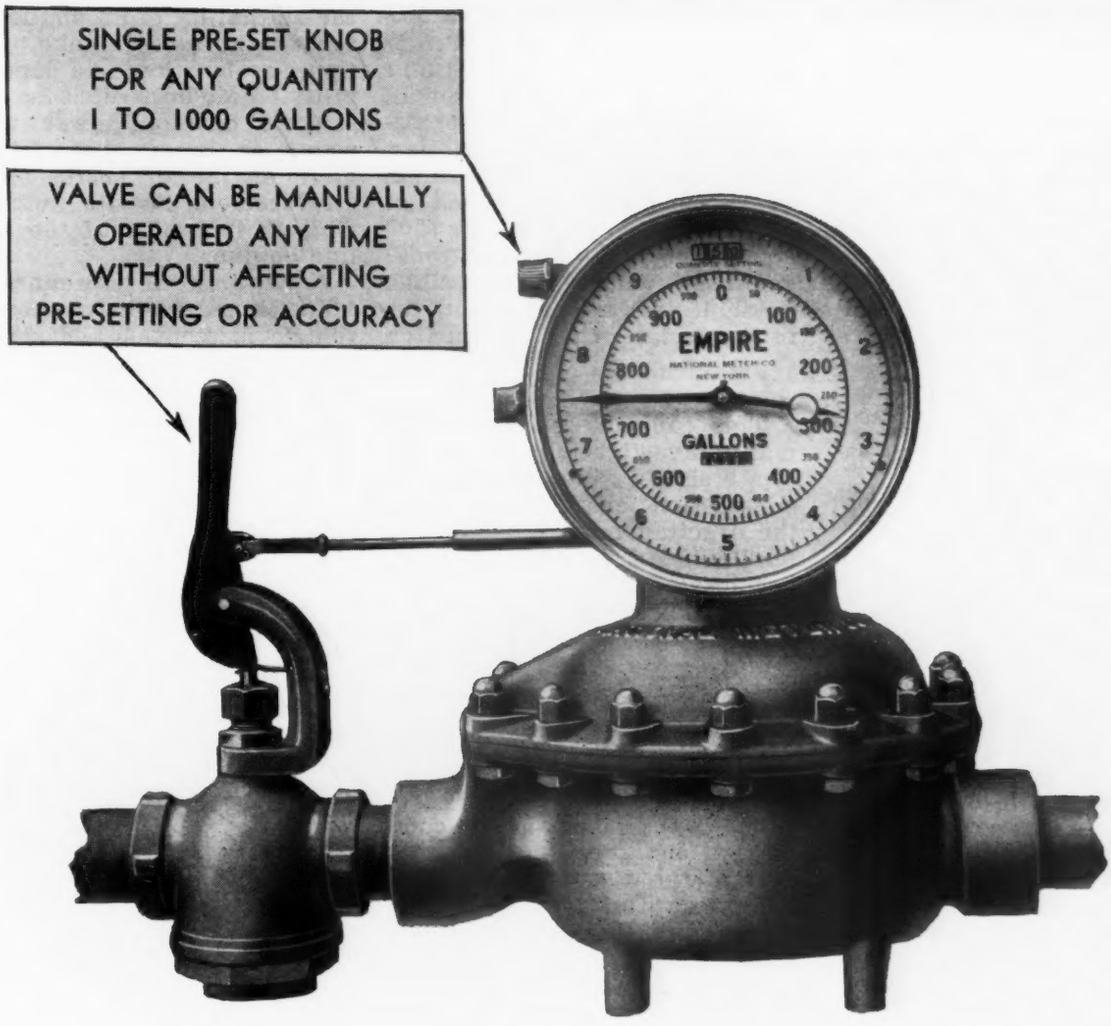
THE diesel engine can successfully compete with the gasoline engine whether favored or not by rates of fuel taxation, H. L. Wittek, consulting engineer, Toronto, Can., told members of the Society of Automotive Engineers, at White Sulphur Springs, June 16-21. At the present time the Canadian tax rate per gallon is the same for gasoline as for diesel fuel.

IN SPITE of strong arguments used against the diesel, it was pointed out that operators had observed the development in Europe and had decided that operating economies obtained there were such as to warrant further experiments. All vehicles purchased within the last two years have rendered such service that their owners have begun to convert further units and oil engined vehicles are being bought almost exclusively by these operators.

British made diesel engines for busses and trucks are now admitted duty free into Canada, thus reducing the first cost by some 15 per cent and even though long waits are sometimes required for delivery they are favored over locally produced gasoline vehicles, it was reported.

New and improved designs were expected to eliminate or greatly reduce the amount of special and expensive materials which are now largely responsible for the greater first cost which was said to be about 50 per cent more per horsepower than the gasoline type and about 14 per cent more per unit of engine weight. This results in a price increase for the complete chassis of about 12 per cent.

Maintenance has been very satisfactory, it was said. Several examples were cited to show what performance could be expected. In one case a 100 H. P. Gardner engine has done well over 100,000 miles, operating in a severe range of temperatures. This engine has not yet had a major overhaul, no bearings have been renewed, the cylinders have not been reground. Fuel consumption is between 7.5 and 8.3 miles per gallon for a 55,000-pound gross load at average speeds of 20 to 22 miles per hour on a 240-mile run. This gives a figure of 206 to 228 gross ton miles per gallon. It was noted that this un-



EMPIRE *MEASURMATIC* METERS

● Safely control the exact registration of any pre-set quantity in each delivery of gasoline, kerosene, fuel and range oils.

● Operate with equal efficiency on truck tank or loading rack installations. Pump pressure or gravity.

● A single pre-set knob for 1 to 1000 gallons.

● One-man operation — with safety.

● Valve can be manually operated at any time without affecting pre-setting or accuracy.

● The Empire Measurmatic Meter embodies the same precision of design and construction that has characterized Empire Balanced-Piston Oil Meters for more than half a century.

Write for Particulars

NATIONAL METER COMPANY

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usual performance is obtained in normal operation.

In another case a 6-cylinder Leyland engine developing 90 H. P. installed in a tractor, had a lubricating oil consumption of 8.4 gallons for 2595 miles computed over 110,000 miles.

A detailed performance record of a diesel bus and the average cost of five gasoline busses of identical pattern over a period of 27 months showed the following figures in cents on a per-mile basis:

	Diesel	Gasoline
Fuel, per mile	1.45	3.90
Lubricants	.15	.19
Maintenance, chassis	2.09	2.39
Depreciation	2.74	2.54
Interest	1.15	1.06
	7.58	10.18

Mr. Wittek also outlined some troubles which have been overcome and some on which progress is expected. Some otherwise very suitable fuel oils deposited their wax content in the fuel filter. The remedy was to install the filter in a warmer place. The use of waste crankcase oil, gasoline or paraffin in the fuel was condemned as a menace to maintenance costs.

One of the inherent advantages of engines with internal mixture formation is that equal output of all cylinders should depend solely on proper adjustment of the fuel pump and nozzles, it was indicated. Why, then, some makers adopt an intake manifold similar to that used on gasoline engines is hard to explain, said the author of this paper.

An argument often used against the oil engine is its low mean effective pressure but the difference is not as great as is generally contended, he said. Attention was drawn to a unit recently brought out by a European maker which is developing a peak of 112 pounds brake mean effective pressure at 1000 rpm. and better than 100 pounds brake mean effective pressure over the range from 400 to 1400 rpm., using a direct injection system. These figures, referring to performance with clear exhaust and normal fuel pump setting, prove that the oil engine no longer lags far behind its gasoline competitor, it was pointed out.

O. D. Treiber, Hercules Motors Corp., at the same S.A.E. meeting, corroborated this statement in his discussion of "Diesel Engines in Transportation." Power curves for Hercules diesels were shown in which economy is plotted as mean effective pressure at 1000 rpm. The results exceed those generally considered possible, he said, and are accounted for in the design of the combustion chamber.

This company made a great many investigations to find a type, shape, and location of combustion chamber to meet the exacting requirements. The final design is a spherical chamber located at the side of the cylinder, with a spray of fuel entering at the side, below the center of the sphere, by injecting across the center of the sphere.

An important feature of this type of chamber is that the piston closes the passageway between the cylinder and the combustion chamber on the upper part of the piston stroke, thus increasing the velocity of the air passing from the cylinders into the combustion chamber at the time when fuel injection occurs. This was said to greatly improve the mixing of the fuel and air during the early part of the expansion stroke. The earlier the fuel is burned on the expansion stroke, the greater the power and efficiency of the engine, it was pointed out.

The rate of combustion should increase as speeds increase, and this is accomplished by the new design with the result that indicated mean effective pressure increases with increase in speed.

Another feature is that fuel is prevented from being burned adjacent to cold walls. The walls are formed from separate pieces inserted in the cylinder block and head and do not radiate the heat into the cooled walls. Fuel spray is kept away from these walls and slow incomplete combustion is prevented by the fact that air, being denser than the fuel spray, tends to keep to the walls while being revolved at a very high velocity, he stated.

Mr. Treiber stated that the important factors governing the suitability of an application are weight, noise, smoke, vibration, acceleration, and dependability. Modern diesels were said to develop power which equals or exceeds that of a gasoline engine of corresponding displacement but its weight is slightly in excess of the gasoline engine.

Noise is more pronounced in a diesel, particularly when the vehicle is stopped and the engine idling. Some diesels were said to be inherently smoky while others are not. Two principal causes for this were cited, both of which are possible of elimination by design or adjustment and the crux of diesel engine design was found to hinge upon smoke elimination by a proper combination of a fuel spray and combustion chamber which perfects the job of mixing the fuel spray and air at a time and rate to provide complete combustion.

The greatest difficulty in maintenance has been the cleaning and adjusting of spray nozzles. This difficulty has been eliminated by the use of a pintle type or self cleaning nozzle which requires no adjustments in the field and which any operator of ordinary intelligence can replace or clean if necessary.

As far as costs of fuel are concerned, the belief was expressed that, as long as the cost of refining is less than for gasoline, the price would be less. Even though the same price were paid for diesel fuel and gasoline, the speaker reminded his audience that the cost of fuel would still show approximately 50 per cent savings in favor of the diesel on the basis of about half the quantity being required for the diesel.

Correction

The article on page 12, June 12th issue of NATIONAL PETROLEUM NEWS was in error in giving the figure on oil imports into the U. S. for the week ending June 8 as 389,000 barrels per day. This figure was for the week, the daily average imports being 55,570 barrels, or about at the prevailing rate. There has been no noticeable increase in imports since the dropping of the NRA oil code, which carried provision for the restriction of imports.

REMEMBER YOUR FIRST *Radio Set?*

In the early days of radio you thought your first set a humdinger. True, distance and volume were limited but the radio functioned and you did get reception. But the modern radio is superior beyond comparison.

NOW PUMPS! Today better materials are used and pumps are improved in a general way, but not until recently has there been any outstanding progress in pump design that might, for example, be comparable to the advanced design of radio.

VARIABLE VOLUME CONTROL

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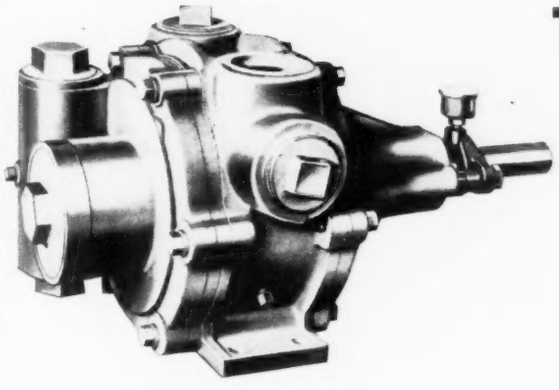
TRI-ROTOR PUMPS

IS A MODERN PUMP ENGINEERING ACHIEVEMENT

The variable volume control, an exclusive Tri-Rotor Pump principle developed by Yale, controls the liquid pump displacement demand up to the capacity of the pump. As the discharge line is opened or closed, pumping accordingly starts or stops. Perfect control of liquid flow and a constant minimum pressure is maintained at all stages of the pumping operation. This is acclaimed by oil men, who have been working with pumps for years, as one of the most outstanding present day achievements for lowering equipment maintenance costs and at the same time increasing operating efficiency.

TRADE **YALE** MARK



Model 50-A V

TRI-ROTOR TRUCK PUMPS WITH VARIABLE VOLUME CONTROL

are today saving money and at the same time giving more efficient service on many trucks of leading oil companies. Let us furnish complete details of how this is accomplished.

MANY OPERATING ADVANTAGES of TRI-ROTOR PUMPS with VARIABLE VOLUME CONTROL

- By-pass is eliminated.
- Heat generation is eliminated.
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- Less Power is required.
- Constant minimum pressure is maintained.
- Does not "shock the line" when starting delivery.
- Works better with meters.
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- Capacity—50-60 G.P.M. at 450-475 R.P.M.
- Simply constructed, strong, durable and compact.

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PUMP DEPARTMENT - STAMFORD, CONN., U. S. A.

Truck Air Brake System Applicable Also To Powered Steering

USING the basic principal of the original air brake which has given world-wide service in rail transportation, Bendix-Westinghouse has produced a brake which is said to give drivers of large highway vehicles a similar system of control, enabling deceleration with less physical effort than is required on the average pleasure car.

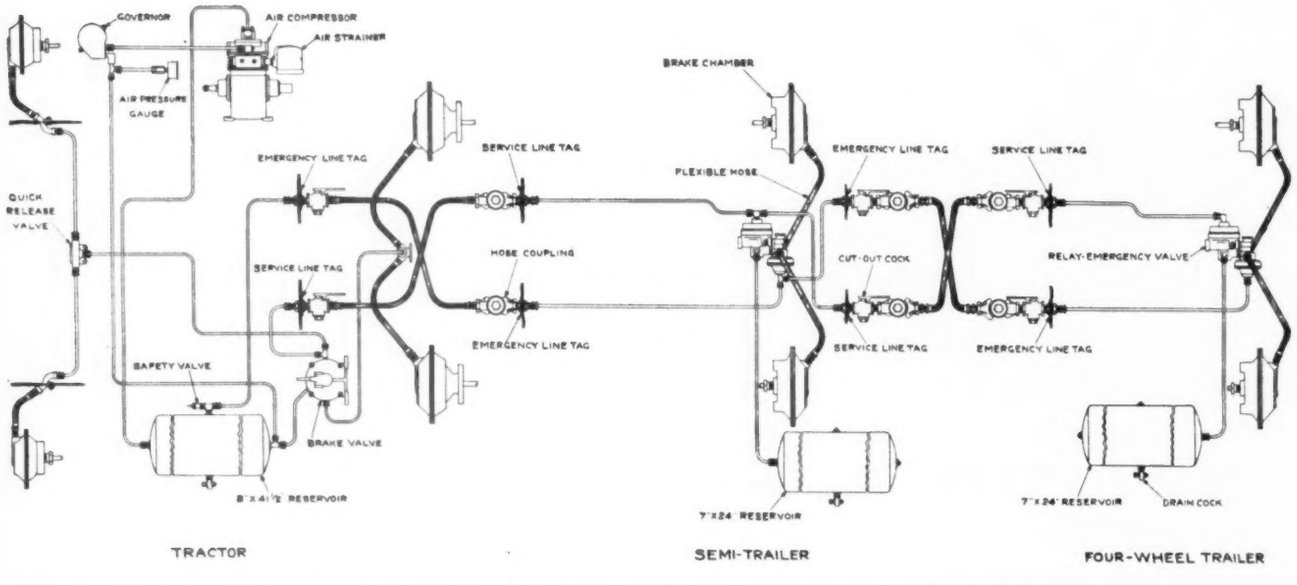
With the universal acceptance of the fact that no vehicle is safer than its power to stop, the subject of brake control is in keeping with modern highway speeds, power and general conditions of service. Regardless whether operated as a single unit or in a train, air control gives graduated brake applications or instant positive stops, the manufacturers state.

The system centers about a relatively small and compact compressor which is an integral part of the vehicle's power plant and is lubricated direct from the crankcase of the motor to which it is attached. Normally the standard two-cylinder compressor is adequate but, with increasing demands for a greater air supply to meet the need of numerous pneumatic devices, a three cylinder compressor with twice the displacement is now available. Its weight is only slightly more than the two cylinder type.

An emergency feature which functions automatically applies the brakes instantly should a break occur between the motive unit and trailer or between trailers. A still more advanced type, particularly adaptable to transporting gasoline or oil, provides an automatic brake application on both tractor and trailer entirely independent of any action on the part of the driver. The versatility of application of this feature is illustrated by the possibility of independent control of trailer brakes by means of a hand valve enabling the operator to keep his train stretched during service applications when descending steep grades. A low pressure indicator warns the driver of this deficiency and adds to the safe operation of the vehicle.

In addition to advantages of the air system may be mentioned some of the economies made possible by them. The abundant power available permits the use of harder and better wearing lining materials and automatic equalization of braking pressure assures even wear and lengthens periods between adjustment, it is claimed. Brake adjustments, when necessary, are accomplished in less than five minutes per braking wheel, either on the road or service floor, without special tools nor especial mechanical knowledge. This is possible through the use of specially designed mechanism.

In addition to these items and in view of the trend toward remote control in commercial vehicles, the presence of the air system makes available at all



Piping diagram showing the conventional air brake application to a train consisting of a tractor, semi-trailer and four-wheel trailer

times a source of air for tire inflation and for power control.

The present trend in design of trucks is to place greater loads on the front wheels. When these loads exceed 8000 pounds, proper steering control becomes a problem. An air steering unit has been developed which may be operated in conjunction with the conventional manually-operated steering gear, thus reducing the driver's effort. A 200-pound force could be reduced to 40 pounds, for example, enough to give the feel of normal steering. Positive control is maintained even in the event of power failure. The design is adaptable to existing types of conventional steering gears.

The problem of clutch control is said to be eliminated by the use of the air-clutch. In place of the considerable number of rods, levers, cross-shafts, etc., whose location, operation, and maintenance are objectionable, the air control unit may be more conveniently located so as to provide the operator with more leg room and eliminate much of the fatigue of operating clutch pedals with excessive pressures. The pedal pressure is not only reduced but its travel can be made as little as three or four inches, maintaining at the same time a graduation as fine as with manual operation.

There is also an air operated gear shift whose operation is similar to the manual operation but enables greater convenience of location.

Other air control devices are available, including, of course, windshield wipers and horns, which operate more efficiently with the excess of power which may be supplied in an air system.

To Check Station Equipment

CLEVELAND, June 21.—To check up on efficiency of tools and equipment at its stations the Standard Oil Co. of Ohio has installed three service cars to call on its stations through Ohio. These cars will cover the state about four times a year.

Car equipment will include an instrument panel for checking up on battery chargers, capacitesters, spark plug testers, tire gauges, and other equipment, and a portable electric grinder and buffer with which tools will be sharpened.

GREATER *Film* STRENGTH

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Motor oils that do not have "High Film Strength" with greater "Oiliness" will soon be as out of date as four cylinder engines. Now is the time to offer this new type of oil to your customers. The Film-ite Process will give your present brand of oil "High Film Strength and Oiliness" without any change in your present specifications whatever.

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Advances in automotive engine design the last five years have shown the most remarkable results that have been obtained, probably at any period during the twentieth century.

Along with these advances, corresponding improvements have been made in the qualities of lubricating oils and in systems for applying these oils to the problem of engine lubrication. Increased engine speeds have placed on the oil, and on the piston rings, new responsibilities unknown in the older types of automotive engines.

Oils must maintain safe films for lubricating wrist pins, cylinder walls, valve guides and stems, under conditions of heat and pressure undreamed of by the engine maker or the refiner of 1910. Piston rings must maintain compression and efficient operation under temperatures as high as 650 F. on the cylinder wall. When these walls "get out of round" under temperature stresses, neither oil nor rings can do their work properly, and repair jobs are in order.

The accompanying article and the article following both present the results of a wealth of experience by the oil refiner and the ring maker, to show the causes of some of these difficulties, and practicable solutions of the problems, in some cases. Refiner and engine builder as well will find the information given here of real service in solving their problems.

Oil Volatility Directly Related To Oil Consumption

By L. L. Davis* and R. D. Best*

Presented before American Society for Testing Materials, Detroit, June 24-28, 1935

• • •

THE recent increase in the consumption of the lighter grades of motor oil as compared to the heavier has resulted in a greatly increased demand for the lower viscosity or so-called "neutral" base oils for blending purposes. This tendency has upset the balance of production of neutral in relation to bright stocks, and if it continues there is the possibility of a definite shortage of the lower-viscosity oils. The available supply of low-viscosity blending oils is limited by the permissible volatility or distillation range. There is, therefore, an economic need for determining the effect of the volatility on consumption in order to conserve the supply of neutral oils.

The effect of the grade of neutral oil used on the available supply of an S.A.E. No. 30 blended oil is shown in Table 1. Thus, it is possible to produce 66 per cent of finished 150 viscosity at 100 F. neutral oil from a typical Mid-Continent pressed (dewaxed) paraffin distillate. About 45 per cent of this neutral is required when blended with bright stock to produce an S.A.E. No. 30 motor oil. Therefore, 146 bbl. of the S.A.E. No. 30 oil can be produced from 100 bbl. of original pressed distillate. If, however, the distillate is reduced to a 300 viscosity neutral, only 41 bbl. of S.A.E. No. 30 oil could be produced.

*Continental Oil Co.

Table 1.—Effect of Grade of Neutral Oil on the Available Supply of S.A.E. No. 30 Blended Oil

Viscosity at 100 F. of Neutral Oil used in Blend	Yield of Neutral Oil from Pressed Distillate, per cent	Percentage of Neutral in S.A.E. No. 30 Oil	Barrels of S.A.E. No. 30 Available from 100 bbl. of Pressed Distillate
150	66	45	146
200	43	58	74
240	35	61	57
300	28	69	41

	40 m.p.h.	50 m.p.h.	60 m.p.h.
Water temperature, deg. Fahr.	180	180	180
Oil sump temperature, deg. Fahr.	205	225	235
Gasoline consumption, miles per gal.	18.5	18	15
Load, hp	14.1	22.4	34.8
Oil circulated, gal. per min	1.67	2.0	2.11

Although a large amount of work has been carried out on the question of motor oil consumption, the net conclusions which can be drawn from the literature are far from satisfactory. In general the investigators have concluded that viscosity is the major factor controlling consumption and that volatility has little or no significance. The majority of the published work has been based upon the examination of a limited group of oils, usually varying over a wide range of viscosity. The resultant consumption data when plotted against viscosity shows a fairly good relationship. It seems to have been overlooked, however, that in such a series

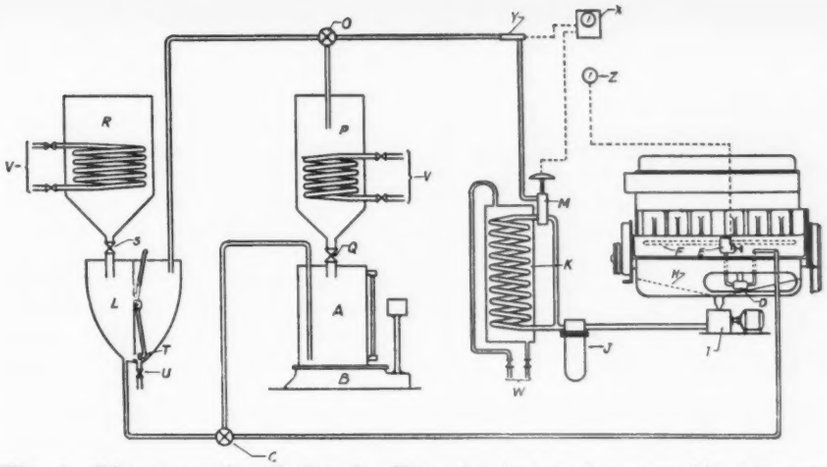

Fig. 1—Diagrammatic oil flow in Chevrolet test-engine assembly for measurement of consumption

of oils there is also a fair correlation between viscosity and volatility, and therefore if the consumption data are plotted against volatility an equally good relationship may result. As far as the authors know, there has been no work published which definitely isolates the effect of the variables of viscosity and volatility.

The authors conceived the possibility of isolating the effect of volatility by preparing a series of oils in which that was the only variable. Such a series could be prepared by blending several neutral oils of varying volatility with bright stock from the same crude oil. The finished lubricants would then all be of practically the same viscosity index and would likewise be quite similar in other properties. If the finished lubricants were blended to be equal in viscosity, then the only property which would be significantly different between them would be volatility. This possibility solved the problem of making corrections for variables which were unknown in magnitude.

Another factor which has made it difficult to draw conclusions from past work is that long-time engine tests are practically impossible to check because of changing mechanical and operating conditions. In long-time tests both the volatility and viscosity of the oil may change widely during the test, thus making it impossible to correlate the results from different oils. Stewart and Risk in a paper before the Society of Automotive Engineers[1] described a method of making accurate oil-consumption tests in a short time. The apparatus used in our work was essentially that of Stewart and Risk, but differed in some details. It was built around a 1933 Chevrolet engine. A diagram of the arrangement is shown in Fig. 1.

Method of Test

The engine was operated with a dry crankcase, the oil being circulated from two outside reservoirs *L* and *A*, the latter being mounted on the scale *B*. Under test operation the oil was drawn from *A* and delivered to engine by the regular pump *D* through the manually operated pressure by-pass valve *E*. The used oil was circulated by pump *I* from the crankcase through the thermostatically controlled cooler *K* back to the reservoir *A*. As the oil was consumed, the time interval was noted for successive small decrements (usually 0.025 lb.) in the weight on the scale. When it was desired to change the oil under test without stopping the engine, the oil circulation was switched to reservoir *L* and two 6-qt. flushing charges of new oil were circulated to remove the old oil from the engine. Reservoir *A* was cleaned and seven quarts of the new oil added. All oil charged to the system was brought to the operating temperature in the steam coil heated tanks *R* and *P*. After flushing, the engine was switched back to system *A* to test the new oil.

The engine operating conditions, given below, were selected to match the conditions observed in a fleet of five test cars of the same model, operating during July and August on Oklahoma highways:

By controlling the oil pressure at the same values as observed in the field and by the induced ventilation of the crankcase, the oil consumption was approximately the same as in the road tests.

In order to correct for expected engine change and the difficulty of resetting the engine to give exactly the same rate of consumption, all consumption data were determined and recorded as the ratio of consumption of the test oil to that of a reference oil. All tests consisted of three consecutive runs of two to three hours each without stopping the engine. The first and third were on the reference

[1] J. P. Stewart and T. H. Risk, "Factors Affecting Oil Consumption," *Journal*, Soc. Automotive Engrs., October, 1933, p. 42.

Table 2.—Characteristics of the Oils Used

	Oil No. 1	Oil No. 2	Oil No. 3	Oil No. 4	Oil No. 5	Oil No. 6-S	Oil No. 7	Oil No. 8	Oil No. 9	Oil No. 10	Oil No. 11	Oil No. 12	Oil No. 13
Viscosity, Saybolt Universal, sec.:													
Neutral oil used at 100 F	70	100	150	180	200	225	240	430	555	495	300	*a*	*a*
Blended oil at 130 F.	235	235.5	235	235	235	237	235	235	236	235	235	277	210
Blended oil at 210 F.	63.9	63.8	63.0	63.0	63.0	63.5	63.0	63.0	62.4	62.8	62.8	63.0	62.4
Percentage of neutral oil used in blend	37	43	44.5	55.7	58	62	60.7	86.1	100	92.3	69	....	....
Flash point, deg. Fahr.	380	405	420	430	425	440	435	445	475	430	450	415	445
Fire point, deg. Fahr.	440	460	475	485	490	505	500	520	555	500	505	480	510
Distillation at 2 mm., deg. Fahr.:													
Initial boiling point	336	359	369	380	390	408	418	444	496	404	410	354	410
2½ per cent	354	375	392	405	411	430	434	475	511	431	426	385	429
5 per cent	370	389	410	422	426	446	447	498	522	451	440	410	443
10 per cent	388	414	430	438	444	462	464	522	536	469	458	442	459
20 per cent	414	434	454	465	468	483	487	552	554	496	482	477	487
30 per cent	428	451	480	485	486	500	505	577	568	522	499	500	505
40 per cent	502	484	506	504	506	520	523	599	579	543	517	519	525
50 per cent	570	545	540	528	530	539	542	620	589	562	536	535	543
60 per cent	608	592	580	562	557	563	564	640	600	580	558	552	564
70 per cent	662	642	630	604	592	598	594	662	608	600	588	570	594
80 per cent	700	690	684	664	646	658	640	685	620	628	632	592	662
90 per cent	*b*	*b*	*b*	*b*	718	*b*	708	*b*	636	672	706	622	*b*
(Tso-Ts)	330	301	274	242	220	212	193	187	98	177	192	182	219
Initial boiling point + 0.2 (Tso-Ts)	402	419	424	428	434	450	457	481	516	439	448	390	454

a Special. *b* Cracked.

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oil and the second was on the oil under test.

The oil-consumption data were plotted against time during each run. After the first few minutes of operation and if the operating conditions were held uniform, the plot was a straight line. The oil consumption, in pounds per hour, for each run was calculated from the slope of the plot. The deviation in the consumption of the reference oil in the first and third runs averaged less than one per cent. All tests in which this deviation was greater than three per cent were discarded. The consumption of the oil under test was reported as the ratio of its consumption to the average consumption of the reference oil for the first and third runs.

Oils Used

The volatility and viscosity characteristics of the test oils are shown in Table 2. The first eleven oils were made from the same crude and have similar viscosity characteristics. In order to obtain a wide range in volatility, an S.A.E. No. 30 grade was used and all eleven oils were blended ot a Saybolt Universal viscosity of 235 sec. at 130 F. This gave an average viscosity of 63 sec. at 210 F. The exact viscosities at 130 F. and 210 F. are given in Table II. The first eight oils are blends of bright stock, having a viscosity of 145 sec. at 210 F., with a series of paraffin pale oils, having viscosities of from 70 to 430 sec. at 100 F. The ninth oil is an experimental sharply fractionated distillate of the given viscosity.

Oils Nos. 10 and 11 are from the same crude source and have the same viscosity, but are blended with broad cut pale oils to give different over-all distillation curves than the first nine oils.

Oils Nos. 12 and 13 are from different crudes and have different viscosity characteristics. They were both blended from commercial S.A.E. Nos. 30 and 40 motor oils to have the same viscosity at 225 F. as oil No. 6-S, that is, 9.2 centistokes or approximately 55½ sec., Saybolt. Oil No. 12 is of Gulf coast crude origin, while No. 12 is an eastern paraffinic oil.

The distillation of the test oils under 2-mm. pressure was

conducted in the Bureau of Mines type of equipment using a Cenco vacuum controller and a butyl-phthalate gage. The maximum pressure variation was a ± 0.2 mm. and the temperature was corrected for a variation of 0.1 mm. or more with a large scale Watson and Wirth chart.[2] The distillations of all oils are given in Table 2. A comparison of the initial boiling points and the 2½ to 30 per cent distillation points will show the wide range of volatility covered by the oils tested.

As oil No. 6 was available in quantity and was being used on road test work, it was selected as the standard reference oil and will hereafter be designated as 6-S.

Test Results

The consumption data obtained by the Chevrolet engine on the above series of oils are given in Table 3. The first column, oil number, refers to the same classification as given in Table 2. The relative consumption of the oil under test is given as the percentage of the average consumption of oil No. 6-S obtained in runs Nos. 1 and 3 for each test. The percentage deviation of oil No. 6-S for the two runs of ecah test is given. The consumption of oil No. 6-S given in the line for that oil is the average of all tests.

The absolute consumption of oil No. 6-S for all runs is not directly comparable as occasional engine overhauls changed the basic consumption. In the 50 m.p.h. series all runs are directly comparable except for oils Nos. 8, 12 and 13. These latter were run some weeks after all other work was completed and after an engine overhaul. It is interesting to note the accuracy with which oil No. 6-S was checked between the two runs in each test. This indicates that the method for flushing the en-

[2] K. M. Watson and Charles Wirth III, "Routine High-Vacuum Distillation of Oils," *Industrial and Engineering Chemistry*, Analytical Edition, January 15, 1935, Vol. 7, No. 1, pp. 72-75.

Table 3.—Consumption Tests with Chevrolet Engine

Oil	Relative Consumption, percentage of Oil No. 6-S	Consumption of Oil No. 6-S, lb. per hr. Run No. 1	Run No. 3	Deviation Between 2 Runs on Oil No. 6-S, per cent
Operation Equivalent to 50 m.p.h.				
No. 1	149	0.1005	0.1011	0.6
No. 2	125	0.1006	0.1009	0.3
No. 3	121	0.0995	0.0990	0.5
No. 4	108	0.103	0.103	0
No. 5	103	0.103	0.103	0
No. 6-S	100	0.0923	0.0923	0
No. 7	97	0.103	0.104	1.0
No. 8	97	0.075	0.076	1.4
No. 8′	99	0.076	0.077	1.4
No. 9	91	0.0945	0.094	0.6
No. 10	116	0.104	0.1045	0.4
No. 10′	108	0.096	0.095	1.1
No. 11	106	0.1065	0.1076	1.1
No. 12	168	0.074	0.0735	0.7
No. 12′	164	0.075	0.074	1.4
No. 13	108	0.074	0.0722	2.5
Operation Equivalent to 60 m.p.h.				
No. 1	136	0.266	0.258	3.0
No. 2	119	0.251	0.255	1.6
No. 3	116	0.255	0.254	0.4
No. 4	104	0.255	0.252	1.2
No. 5	105	0.217	0.216	0.5
No. 6-S	100	0.226	0.225	0.5
No. 7	97	0.202	0.203	0.5
No. 9	94	0.199	0.197	1.0
No. 10	116	0.206	0.206	0
No. 10′	111	0.2005	0.199	0.7
No. 11	106	0.209	0.206	1.5
Operation Equivalent to 40 m.p.h.				
No. 1	140	0.0825	0.0832	0.8
No. 2	116	0.083	0.083	0
No. 3	107	0.084	0.083	1.2
No. 4	105	0.084	0.084	0.0
No. 5	104	0.0855	0.084	1.8
No. 6-S	100	0.0818	0.0817	0.1
No. 7	96	0.0825	0.0827	0.2
No. 9	94	0.082	0.0825	0.6
No. 10	112	0.069	0.0697	1.0
No. 11	107	0.083	0.083	0

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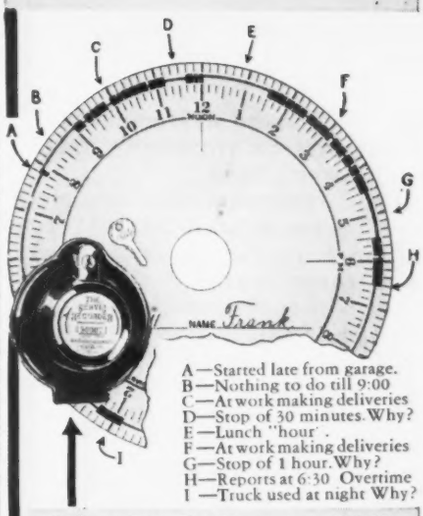
A—Started late from garage.
B—Nothing to do till 9:00
C—At work making deliveries
D—Stop of 30 minutes. Why?
E—Lunch "hour".
F—At work making deliveries
G—Stop of 1 hour. Why?
H—Reports at 6:30 Overtime
I —Truck used at night Why?

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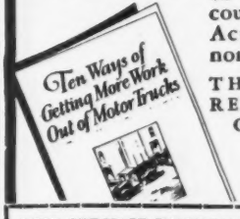

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Table 4.—Consumption Tests with 8-Cylinder Engine

Oil	Relative Consumption, percentage of Oil No. 6-S	Consumption of Oil No. 6-S, lb. per hr.		Deviation Between 2 Runs of Oil No. 6-S, per cent
		Run No. 1	Run No. 3	
No. 2	108	0.900	0.884	1.8
No. 3	115	0.765	*a*	...
No. 4	107	0.950	0.905	4.9
No. 5	102	0.993	0.949	4.6
No. 6	100	0.937	0.939	0.2
No. 7	99	0.918	0.882	4.1
No. 10	109	1.040	1.041	0.1
No. 11	106	0.990	0.974	1.6

*a*Not completed.

gine definitely overcomes any contamination through drainage between runs.

The consumption reported may be considered as that resulting from the oil as charged, since there was practically no change in the viscosity or volatility characteristics during the test. A 250 end point straight-run aviation gasoline was used to eliminate serious crankcase dilution, and the test period was so short that there was no increase in viscosity due to oxidation or evaporation. The oil at the end of the test showed a viscosity change not greater than 2 sec. at 130 F.

Table 4 gives the results for a similar series of tests made with an 8-cylinder in-line 120-h.p. engine at 50 m.p.h. The actual consumption was higher in this series and the reproducibility not so good.

During September it became possible to make a few road runs with a Chevrolet test fleet of four cars. The fleet, freshly overhauled, was operated on oil No. 6-S for a 2500 mile break-in period. Two calibrating runs of 1000 miles were then made with oil No. 6-S to determine the difference in consumption between cars. A series of runs was then made comparing oil No. 6-S with the test oils Nos. 1 to 4, inclusive. In each run of 740 miles two cars were on oil No. 6-S and two on the unknown oil. The actual consumption was corrected for the car differences found in the calibrating run and the relative consumption of the unknown oil in terms of the percentage of consumption of oil No. 6-S was calculated. Table 5 gives the average results of two or more runs on each oil. The tests were over a long enough period to cause a material increase in the viscosity of the crankcase oil due to the evaporation of the more volatile oils. The average viscosity at 100 F. at the end of the runs is given in the same table. These viscosities should be compared with the original viscosity of all oils of about 555 sec. at 100 F. While these tests were confined to fair days, the inevitable variation in temperature, winds, etc., made checks difficult.

Table 5.—Chevrolet Fleet Road Tests

Speed, 50 m.p.h. Water temperature, 180 F. Average oil sump temperature, 245 F.

Oil	Relative Consumption, percentage of Oil No. 6-S	Average Viscosity at End of Test, sec., Saybolt Universal at 100 F.
No. 1	146	900
No. 2	134	806
No. 3	143	737
No. 4	131	670
No. 6-S	100	631

Discussion of Results

A study of the data in Table 3 indicates that there is a very definite increase in consumption with increase in volatility. In a crankcase oil it is probable that the first portion of the distillation range would have the greatest effect on consumption. The first nine oils, being of a uniform series, should show a reasonable correlation between their initial boiling points and consumption. This relationship is shown in Fig. 2 by the dots and heavy line.

The last four oils, not being of the same homologous series, show a definite non-conformity with this initial boiling point *versus* consumption curve as shown by the X's in Fig. 2. Similar graphs comparing the consumption with the 2½, 5 and 10 per cent distillation points show lesser correlation, the higher the distillation point used.

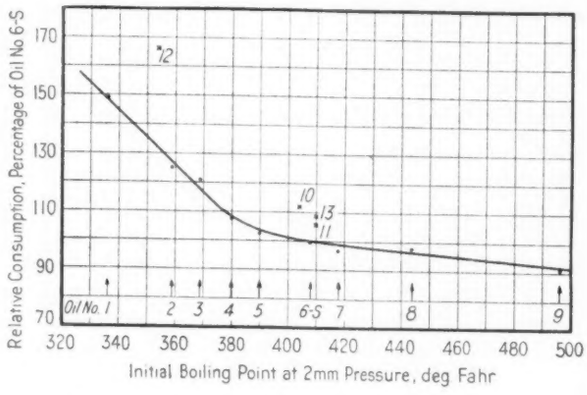
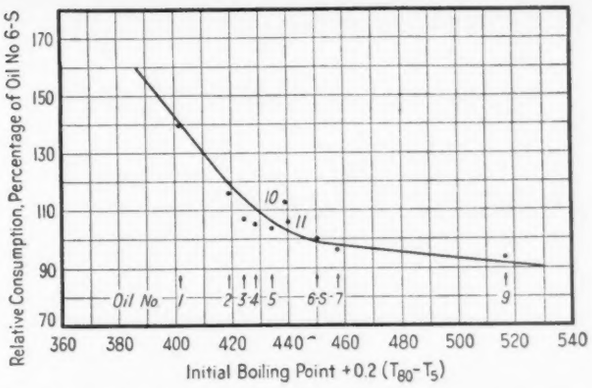


Fig. 2—Curves showing relationship of consumption to initial boiling point of crankcase oils

The distillations of oils Nos. 10, 11 and 12 show a less overall range as compared to those oils in the first series having similar initial boiling points. This characteristic is shown by the difference between the 80 per cent distillation point and the 5 per cent point in Table 2. If this difference is significant, the initial boiling point modified by the over-all distllaton range should show correlation with the consumption. Figure 3 gives the relationship between consumption and the initial boiling point plus one-fifth of the difference between the 80 and 5 per cent points: Initial boiling point $+0.2\ (T_{80}—T_5)$. This "volatility factor" shows good correlation for all oils except No. 13. There is no apparent variation in the distillation of the latter oil to explain this discrepancy.



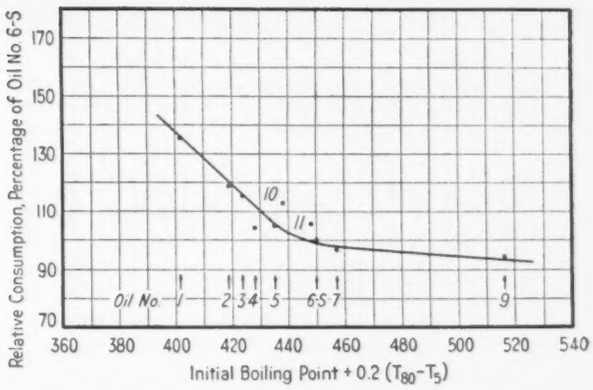


Fig. 3 (Left)—Relationship between consumption and volatility factor 50 miles per hour. This factor is calculated from—Initial boiling point, plus 0.2 (T_{80}—T_5). Fig. 4.—(Right)—Relationship between consumption and volatility factor, at 40 miles per hour

which is probably due to the error of test or some factor not yet recognized.

It is realized that with only one (No. 12) widely differing oil in the series the suggested volatility factor will probably require modification when additional data are available. The divergence of oil No. 12 may be partially due to viscosity differences, if the viscosity correlating temperature of 225 F. is not correct for the engine in question. A volatility factor using the slope for the first ten to thirty per cent evaporated rather than the over-all slope may give good correlation. It is possible that other factors such as surface tension, oiliness, molecular adsorption, etc. affect consumption and must be considered when comparing oils from different sources.

After the completion of the main series of tests at 50 m.p.h. runs were made at 40 and 60 m.p.h. on the Chevrolet engine. The consumption plotted against initial boiling point +0.2 (T_{80}—T_5) is shown in Figs 4 and 5. In both cases the effect of volatility is not quite as great as at 50 m.p.h. This may be explained by the lower temperatures involved at the lower speed and the higher basic consumption at the high speed.

A similar correlation of the data obtained with the 8-cylinder engine and the Chevrolet cars is given in Fig. 6. The light line is the same as that given in Fig. 3. The dots and heavy line give the data for the 8-cylinder engine test. It is evident that volatility is of less importance in this case. The basic consumption was approximately ten times as great as in the previous tests. This confirms the opinion that the effect of volatility on consumption depends upon the actual basic rate of consumption.

The consumption obtained by the fleet road tests is shown by the X's. Although the correlation is not good, the general effect of volatility is of the same order as was obtained in the engine tests. The variation between oils is probably due in part to the variation in weather conditions during the test. The change in viscosity during these runs also played an important role in the over-all consumption. This indicates the desirability of a short-time test as used in this work for the correlation of the various factors controlling consumption.

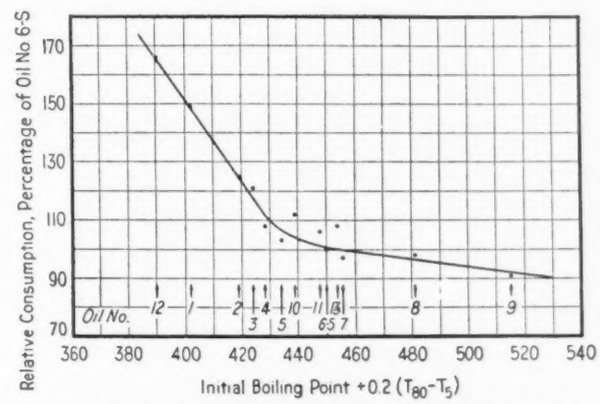
Conclusions

1. The effect of volatility as compared to viscosity on oil consumption appears greater than previously thought, particularly in cases of high-temperature operation where the basic consumption is low.

2. The effect of volatility on consumption is of minor importance when the consumption is very high because of engine design or high speed.

3. In a given uniform series of oil from the same source there is a simple relationship between front end volatility and consumption.

4. In an unrelated or non-uniform series of oils the volatility effect may be a function of the front end volatility modified by the over-all distillation characteristics.



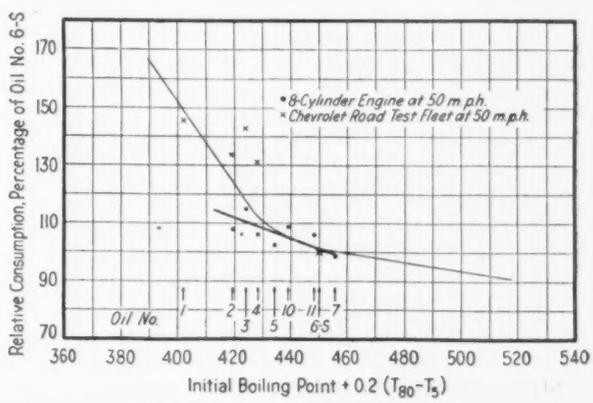

Relative Consumption, Percentage of Oil No. 6-S
170
150
130
110
90
70
360 380 400 420 440 460 480 500 520 540
Initial Boiling Point +0.2 (T_{80}-T_5)
• 8-Cylinder Engine at 50 m.p.h.
× Chevrolet Road Test Fleet at 50 m.p.h.
Oil No. 1 2 3 4 5 10 11 6S 7

Fig. 5 (Left)—Consumption-volatility factor relationship at 60 miles per hour. Fig. 6 (Right)—Relationship of consumption and volatility, in Chevrolet test fleet, and in an 8-cylinder engine, at 50 miles per hour

Lubrication Efficiency, Oil Consumption Controlled by Cylinder Design

By M. O. Teetor*

Better quality in lubricating oils is being demanded now than ever before in the history of the petroleum and automotive industries. Solvent refining, hydrogenation, and other processes are bringing to the fore the pros and cons of refiners, as to the efficiency and stability of their products, and the relative values of products made by different processes.

It must be remembered that variations in engine design may place greater burdens on the oil refiner than are possible, in the nature of the raw material, for him to carry. Ill-considered design may and frequently does create conditions where it is impossible to properly lubricate an engine, no matter what type of lubricant is used.

The accompanying article presents some of these numerous points in design where the responsibility for prevention of lubricating troubles rests squarely on the shoulders of the engine designer. That designer cannot afford to create problems which are unsolvable with any practicable lubricants, when proper design, generally well understood, will eliminate the troubles. For the existence of such problems their is therefore no reasonable excuse.

Presented before American Society For Testing Materials, Detroit, June 24-28, 1935

• • •

THE oil film maintained between the cylinder wall and the compression rings, and between the rings and the ring grooves in the piston, seals the engine against blow-by. A thick film of oil between these surfaces would be ideal for sealing the engine against blow-by, but for other reasons a thick film is not desirable. A piston must have clearance in a cylinder for an oil film plus additional clearance for thermal adjustment. A piston ring must have edge clearance to allow it to expand and contract freely to follow the cylinder wall. The necessary clearance between these surfaces is more than ample for a thick film of oil, but a thick film is difficult to control and a thin film is sufficient for adequate lubrication. The pressures between these surfaces are varied and constantly changing so that the oil is constantly on the move. The trend of the movement is into the combustion chamber where the oil not only ceases to be useful but becomes troublesome.

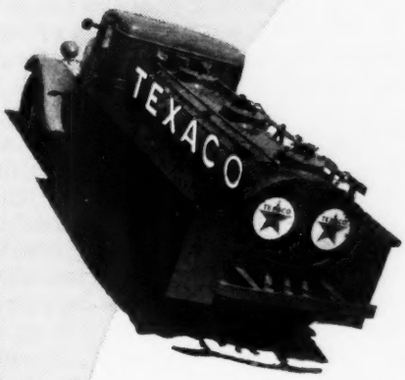
It is significant that when used oil is clean the oil consumption of the engine is usually low and wear is almost insignificant. When used oil is dirty, oil consumption is usually high accompanied by excessive wear. The following explanation for this phenomenon seems reasonable. The oil film on a cylinder wall is exposed to the heat of the combustion chamber when the piston is at the bottom of the power stroke. Some of the oil on the cylinder wall will be burned each power stroke. The amount burned depends largely upon the thickness of the oil film. If the film is thin the heat can readily pass through the oil into the cylinder wall and not destroy the oil. A thick film of oil obstructs the heat flow and the surface of the oil exposed to the heat burns to carbon. The carbon thus formed mixes with the oil on the cylinder wall and some of it is constantly finding its way back into the crankcase past the rings.

For this reason an engine consuming large quantities of oil is probably operating with a thick film of oil on the cylinder walls which is being attacked by the heat and turned into carbon which changes the color of the oil. The more oil an engine uses the more contaminated the oil becomes. There is such a definite relation between the color of used oil and oil consumption when the other variables affecting oil consumption are held constant that the oil consumption can be closely estimated by the color of the used oil.

A thin film of oil is sufficient for adequate lubrication as long as the film is not broken. There is less chance of it being burned by the combustion heat if the thickness is uniform and sufficiently thin to allow the heat to pass readily into the cylinder wall. It is probably not known just how thin this oil film could be, but an idea of about how thin it is in an economical engine can be ascertained from the following figures: The oil film on the cylinder wall of an 8-cylinder engine that is running 2000 miles to the gallon is so thin that it will hardly show when wiped off with a white cloth. The oil consumed per cylinder per stroke in such an engine would be 0.000005 cu. in. If a uniform layer of oil is burned from the flame-swept area of the cylinder barrel, the oil film consumed would be only 0.0000001 in. thick. If the oil film retained on the cylinder wall plus the film consumed is

*Donahue & Coe, New York.

GOING ....



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hardly detectable, the film necessary for adequate lubrication is probably microscopic in thickness.

The bottom of the piston skirt performs the first thinning operation on the oil film. Its efficiency in cutting down the thickness of the oil film is largely determined by its clearance in the cylinder and its ability to contact the cylinder wall uniformly around its entire circumference. Pistons that have the lower outside corner beveled or rounded do not assist in keeping the oil film thin because they ride over the oil film rather than help scrape it off. When the piston skirt does not scrape the oil film off of the cylinder wall to some extent, the entire oil control falls upon the piston rings. Piston rings can be designed to control only a certain volume of oil without other disastrous effects so that the assistance of the piston skirt is important.

Piston-skirt pressures must be sufficiently uniform under all operating conditions not to break through the oil film and produce dry streaks in the cylinders. Concentrated spotty skirt pressures are usually caused by piston skirt distortion. All pistons have some distortion at some speeds. Some pistons do not have sufficient distortion within the speed range at which they are operated to break through thin oil films and are therefore very satisfactory. Whenever a piston skirt has sufficient distortion to break through an oil film, the results are disastrous to the life and performance of the engine because the skirt of a piston will scuff, and scuff the cylinder. The surfaces of the piston rings will scuff when they pass over the dry scuffed streak in the cylinder. The rings turn circumferentially on the pistons. As they rotate they present a new section of the surface each stroke to the scuffed streak in the cylinder which will destroy the entire surface of the rings in a very short time.

A piston is a combination ring carrier and cross-head. The piston skirt must present sufficient rigid bearing surface to the cylinder to ride straight up and down in the cylinder. The piston head carrying the

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rings must be supported by the skirt of the piston. If the piston skirt is not sufficiently rigid to resist collapse or operates with excessive clearance, the head or lands between the rings can strike the cylinder wall. When the head or lands between the rings strike the cylinder wall they either disturb or break through the oil film. When the rings pass over these spots where the oil film is broken, they start a scuffing action which will continue as long as the piston head strikes the cylinder wall.

Cylinder Distortion

Cylinders that are accurately machined straight and round at room temperature do not stay straight and round after the engine is up to temperature and in operation. Mechanical and thermal distortion changes the shape of the cylinder barrels under operating conditions. Mechanical distortion of cylinders that affects oil consumption is caused by studs and bolts in the cylinder walls or in adjacent sections that hold other parts of the engine to the cylinder block. Of the entire classification, cylinder-head studs are the worst offenders.

In order to get a clear conception of the amount of cylinder distortion in our present-day automobile engines, the cylinders of a new engine should be examined after about five or six hours' running. At the end of this short run the piston rings have had an opportunity to show up the particular parts of the barrels that do not conform to their accurate shape. Any high spots or protruding areas will be polished by the rings. The areas that are pulled away from the round contour of the cylinder will appear light brown in color because the rings will not have had contact or sufficient pressure in these areas to scrape the burned oil off the surface. The irregularities in the cylinder surface show up very plainly after a few hours of running, but after this first development period the piston rings start the process of wearing the cylinder round while it is in its heated, distorted condition.

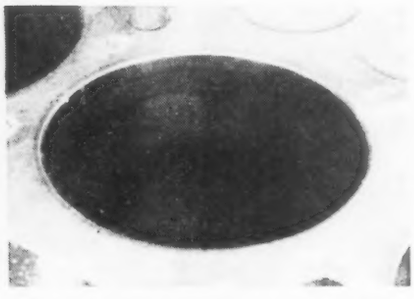

Fig. 1—Typical example of mechanical distortion of an engine cylinder under high temperature conditions with inefficient cooling

Fig. 1 is a photograph of a typical example of mechanical distortion. It shows a pocket pulled in the top of a cylinder barrel which has been caused by the tension on a cylinder-head stud. The design of the stud anchorage or its location is responsible. The variation of the contour of a cylinder surface from a true circle caused by mechanical distortion is frequently as much as 0.002 or 0.003 in., and in some cases has been found to be as much as 0.005 in. The seriousness of this situation is increased by the fact that the area of such distorted portions is often very small. The depressed or protruding areas are frequently in the form of spots or streaks similar to the distortion shown in Fig. 1. This type of distortion forms a series of humps and depressions throughout the entire circumference of the cylinder to which neither pistons nor piston rings can even reasonably conform.

The improvement in oil consumption that can be effected by the elimination of most of the mechanical distortion can be demonstrated by finish honing cylinders with the head bolted in position. This operation can be done by using a special head provided with holes through which the hone can be operated. The cylinders are then finished with the tension on the cylinder head studs which is the factor that distorts the top of the cylinder barrels. A special hydraulic torque-indicating wrench is used to tighten the cylinder head nuts so that the tension can be duplicated. When cylinders are finish honed in this manner the mechanical distortion of the cylinder barrels is reduced to a minimum.

Comparative oil-consumption tests have been made on many engines with the cylinders finished conventionally and then finished with a special head. The elimination of most of the mechanical distortion by this special finishing process has improved the performance of engines in terms of oil consumption as much as 500 per cent.

* * * *

Fig. 2 is a typical illustration of a spot in a cylinder wall that has expanded away from the round contour of the cylinder because of high temperature. Water jackets were originally designed with the idea in mind that as long as the hotter portions of the cylinder blocks were surrounded by water they would cool sufficiently by thermosiphon or by a slight circulation of the water. If the engine would not visibly over-heat the cooling system was adequate. The many improvements that have been made in engine design have made it possible to produce more power with the same size or smaller engines. When more power is produced more heat is generated and the cooling system that was once adequate becomes insufficient. The additional heat generated is localized in spots which increases the differential in temperature between the different portions of the cylinder barrel.

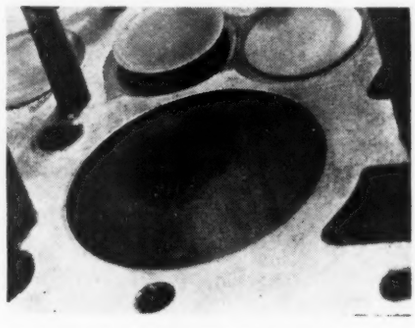

Fig. 2—Cylinder wall spot, which has expanded away from round contour of cylinder

Cylinder-Wall Temperatures

Hot spots in cylinder barrels do double damage. Not only do the cylinders warp out of shape because of thermal distortion so that the piston rings cannot control the thickness of the oil film but some of these spots get so hot that they cannot be lubricated. Fig. 3 shows a spot in a cylinder that has been scuffed by the piston rings. This par-

ticular area in this type of engine is subjected to the blowtorch action of the combustion chamber flame as it passes over the top of the cylinder to the exhaust valve. The restricted space provided for water between the cylinder barrel and the exhaust valve, or the insufficient volume of water passing through this space, is responsible for the high temperature at this spot which has been high enough to destroy lubrication. It is not uncommon to find temperatures as high as 650 F. in this location.

Several fundamental factors in the design of an L-head engine make this spot one of the most difficult to cool. Space must be provided for cooling water between the cylinder barrel and the valve ports and yet at the same time it is advantageous to have the valves as close to the cylinder barrel as possible. A compromise in design between adequate space for water and a more efficient combustion-chamber shape is what seems to cause the trouble. If space for cooling water is sacrificed in order to move the valves a little closer to the cylinder the engine will probably produce more power which in the end will generate more heat to be absorbed less efficiently because of less cooling water. The heat is regenerative in another way because steam forms in these narrow passages and lime deposits form, which in a very short time will entirely close the passage and eliminate the cooling entirely.

Some engines when operated at top speed or full load or even sometimes within 80 per cent of top speed or full load will develop hot spots in the cylinder barrels that are too hot to be lubricated. The oil on the surface of a hot spot in the cylinder decreases in viscosity because of the high temperature to the point where the strength of the oil film is not sufficient to withstand the pressure of the piston rings. The hot blow-by gas in the combustion chamber passes between the ring and the cylinder wall generating more heat because the oil seal has been broken. Therefore starting with the breaking down of the lubrication the temperature of the hot spot increases rapidly and scuffs both the high-temperature area in the cylinder barrel and the surfaces of the piston rings.

Accurate cylinder wall temperatures are rather difficult to obtain. Average cylinder wall section temperatures useful in designing efficient cooling systems can be obtained by brazing thermocouples in the cylinder wall sections with the ends of the wires finished flush with the cylinder surface. The water temperature influence can be eliminated by insulating the thermocouple wires through the water jacket to the outside of the block. Cylinder surface temperatures can be recorded in the same manner by a slight change in the mounting of the thermocouple. In order to check surface temperatures it is necessary to stop some of the heat flow from the thermocouple to the cylinder wall. This can be accomplished to some degree by mounting the thermocouple in the center of a taper plug approximately 1/16 inch thick. The taper plug is then driven into a reamed hole and finished to the contour of the cylinder wall. The water is packed off on the water jacket side and the wires insulated to the outside of the cylinder block.

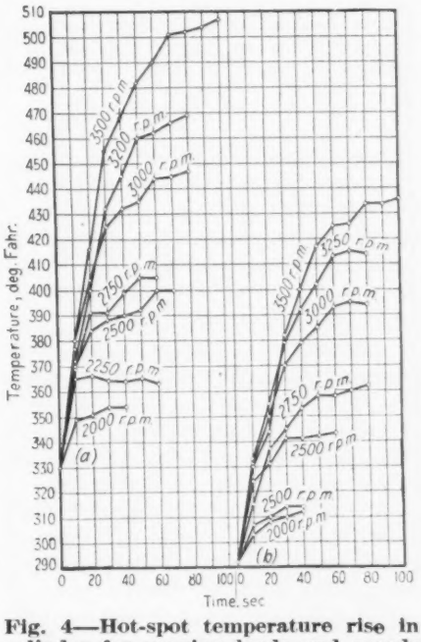

Fig. 4—Hot-spot temperature rise in cylinder for varying loads and speeds

Probably neither the sectional temperatures nor the surface temperatures recorded in this manner are correct but at least they are on the low side. Since the temperatures recorded in this manner are sufficiently high to cause concern, the extreme accuracy of the temperatures becomes rather unimportant.

The temperatures of cylinder wall hot spots go up and down with the throttle opening. The time required for a hot spot to reach maximum temperature at a definite speed and load depends to a certain extent upon the efficiency of the cooling system. Fig. 4 shows temperature rise in relation to engine speed and the time in seconds required for the cylinder wall to reach a maximum temperature at a given speed. The thermocouple used in this test was located in the cylinder wall midway between the valves and in the middle of the top dead-center position of the top piston ring. The cylinder used in this test was conventionally designed with respect to cooling water capacity and circulation.

The temperatures indicated in Fig. 4 (*a*) were sufficiently high to scuff the piston rings. After these temperatures were taken the cylinder was examined for obstructions in the water jacket and a small quantity of core sand and lime was removed from the space between the cylinder wall and the valve ports. Fig. 4 (*b*) shows cylinder wall temperatures after the water jacket was cleaned out. The decrease in cylinder wall temperature eliminated almost all the scuffing of the piston rings which indicates that cylinder lubrication starts to break down after the wall has reached a temperature of approximately 400 F.

Fig 5 indicates the position of ten thermocouples located in the cylinder wall and roof of a

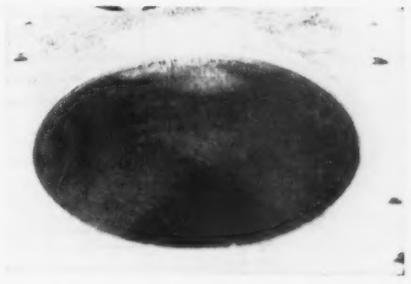

Fig. 3—Spot in cylinder which has been scuffed by piston rings. This frequently happens when the temperature of the spot is too high to permit maintenance of an oil film on the surface

single cylinder block used on an experimental test engine. The cylinder used for this work was conventionally designed with respect to the water circulation but the water passages were larger than those ordinarily used. The highest temperatures recorded are therefore considerably lower than will be found in some of our present-day engines. Fig. 6 is a record of the temperatures recorded at the different thermocouple locations from 2000 to 3500 r.p.m. full load. The highest cylinder wall temperature recorded was 292 F. The hottest area in this cylinder wall was in the top of the barrel on the valve side as indicated by thermocouples 7 and 8. These points were considerably hotter than thermocouple 4 which was only ½ in. below 7 which indicates how small these hot areas can be.

When the differential in temperature is great between a small hot area and the surrounding surface the hot area expands and distorts the cylinder surface producing small irregularities in the surface. When the piston rings pass over these areas the ring pressure is concentrated on the small protruding spots. The viscosity of the oil on these hot areas is very low. The combination of increased pressure and decreased oil-film strength results in scuffing. Thermocouples 9 and 10 in the roof between the valves and the cylinder barrel indicate much higher temperatures than found on the cylinder wall. The expension of this section distorts the top of the cylinder barrel.

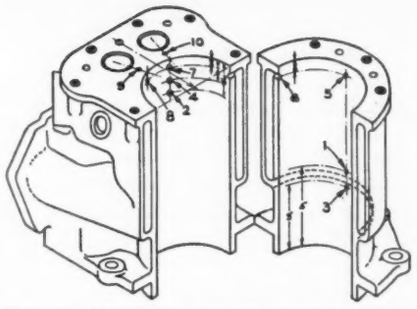

Fig. 5—Diagram showing where thermocouples were placed to determine temperatures in various parts of the engine

There is a differential in temperature between thermocouples 1 and 3. This particular test shows a difference of only 10 to 15 deg. between these two points but in cylinders of similar design with less efficient cooling systems this differential is much greater. This temperature differential seems rather unimportant but in this particular location it has a very great influence on oil consumption. The temperatures above and below where the water jacket joins the cylinder barrel are quite consistent around the entire circumference of the cylinder. Under operation, these two temperatures establish two different cylinder diameters very close together vertically. When the piston rings ride over the junction of these two different diameters they actually collapse and leave the cylinder wall.

An engine of this particular design will not be economical in the consumption of oil until the piston rings have actually straightened the cylinder barrel so that it is straight when the cylinder block is up to operating temperatures. A piston reciprocating in a cylinder with the rings rotating on the head makes a rather efficient tool for producing a round straight hole. This attempt at making a round straight hole in which to operate is the life-long job of pistons and rings when they operate in cylinders that are either mechanically or thermally distorted. The piston rings therefore actually attempt to wear a cylinder straight and round when the cylinder block is up to operating temperatures and with considerable success.

One engine having the junction of the water jacket in the piston ring travel continually improved in oil consumption throughout a 60,000-mile dynamometer run. When the test started, the first checks showed oil consumption at the rate of 600 miles per gal. at 60 m.p.h. After 60,000 miles the oil mileage had increased to 2500 miles per gal. Before the test started, the cylinder barrels were carefully measured and they checked commercially round and straight. The cylinders were measured after the test and the diameter at the junction of the water jacket and cylinder barrel had increased 0.0025 in. with an increase of only 0.001 in. on each side of the junction.

Hot spots in cylinder walls have been eliminated to a great extent in some of the recently designed cylinder blocks by the use of larger water passages and circulating systems that direct the cold water into the hot areas. The temperature in the hottest spot of one of these new engines varies only 20 deg. Fahr. from 2600 to 4200 r.p.m. full load. The elimination of hot spots in cylinders increases the possibility of adequately lubricating them at higher speeds and loads.

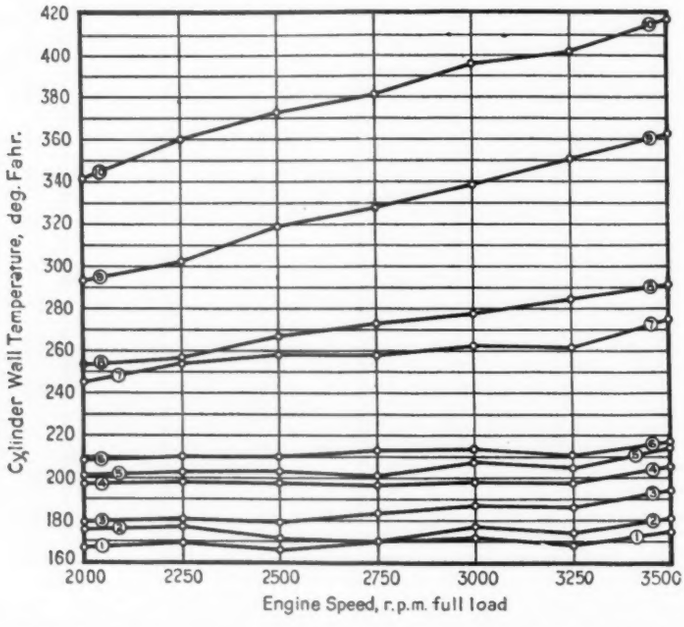

Fig. 6—Cylinder wall temperatures taken at speeds of from 2000 to 3500 r.p.m., in the test engine shown in Fig. 5

Gasolines Should be Classified on Basis Of Volatility, Say S. A. E. Engineers

By Arch L. Foster
N. P. N. Staff Writer

WHITE SULPHUR SPRINGS, June 21

IF THE average volatility of commercial winter gasolines were made the average for summer gasolines, the possible horsepower output of automotive engines would be increased by 7.5 to 10 per cent, automotive engineers were told at the meeting here of the Society of Automotive Engineers.

The engineers pointed out that, in order to make this practicable, it will be necessary to further improve the design of fuel systems to avoid vapor lock and to take advantage of the performance possibilities of a more volatile fuel, it was stated.

Mixture manifold temperatures have been reduced by 30 degrees F. on the average since 1930, the engineers also pointed out. This temperature range is approximately equivalent to the difference in volatility between average winter and summer fuels, it has been found by survey. In other words, this reduction of manifold temperatures, when using fuels of the permissible volatility, has been, or may be, responsible for as high as 10 per cent increase in the effective horsepower of properly designed engines and fuel systems.

The practical results of increasing fuel volatility and the capacity of fuel systems for handling these fuels is summarized in such masterly fashion by J. O. Eisinger and D. P. Barnard, of the research staff of Standard Oil Co. of Indiana, that their conclusions are given in full:

"In discussing the foregoing results it should be kept in mind that ordinarily, if reductions can be effected in mixture temperature, an increase in compression ratio may be permitted for any given octane number of motor gasolines. The effect of mixture temperature on knocking tendency is not a particularly definite relation, but in the car used in this work it appeared to be in the order of 1 octane number for each 15 or 20 degrees F. change.

This would indicate that, where advantage is taken of these two effects, improved volumetric efficiency and the use of a higher compression ratio because of the lesser tendency to detonate with the colder mixtures, the brake horsepower may be increased about 15-20 per cent for a 60 F. decrease in the intake manifold or mixture temperature. If we choose to go half way and obtain a 7.5-10 per cent increase in horsepower, then the mixture temperature need only be lowered 30 F. and the compression ratio increased about 0.25 of a ratio.

"The anti-knock requirements of this altered engine will be substantially the same as that of the lower compression ratio engine with its hotter intake manifold. The improvement in fuel volatility required to give this improved performance would be that represented by the difference between the average summer and winter gasoline of today. If passenger cars could handle winter gasoline in summer, then there could be effected a 7.5-10 per cent increase in horsepower of present day engines.

"In other words the average winter gasoline in the middle west is capable of developing about 7.5-10 per cent more power than summer gasoline if the engine design is changed to take full advantage of the properties of present winter gasoline. In any event the intake manifold should operate at about 30 F. colder in the winter than it does in the summer so as to take advantage of the difference due to volatility.

It seems that considerable more attention should be directed toward preventing, during normal driving conditions, the extremely large fluctuations in the temperature of the intake manifold, particularly on the hot side. Most of us are familiar with the lack of "pep" in nearly all cars when attempting to accelerate again to a high speed after having come down to a relatively slow speed. In general, with present day average

THE accompanying article will be found of importance and interest to non-technical readers, although it discusses largely tests and characteristics of motor fuel which are dealt with principally in oil company and automotive company laboratories.

The article brings out the greater degree of co-operation existing today between oil company and automotive engineers to fit engine design to the characteristics of motor fuels generally available, and indicates what is possible in the future, with certain changes in the characteristics of motor fuel, if engines are equipped to properly use such fuels.

Volatility, the property of motor fuels dealt with principally in the article, is defined in general terms in a report prepared by the A.S.T.M. Committee D-2, on petroleum products and lubricants, as the tendency of a product to change from the liquid to the vapor state.

For gasoline, which like all petroleum products, is a mixture of hydrocarbons which boil, i.e., pass from liquid to gaseous form, at many graduations of temperature between certain fixed limits, its characteristic of volatility is measured by a variety of tests with which the industry generally is familiar. These include flash and fire, distillation, vapor pressure and evaporation tests.

gasoline, the temperature of the intake manifold should never be required to operate at much above 160°F. in the summer and about 130°F. in the winter if the same low speed requirements of car performance are set up as used in this investigation. It is realized that no two people will generally agree on this latter point and therefore, the more rigid the requirements, the higher the temperature at which the intake manifold will have to operate."

A serious need exists for some practical, generally accepted index or classification of volatility in motor fuels, by which relative volatility may be indicated, J. M. Campbell, W. G. Lovell, and T. A. Boyd, General Motors Corp., Research Division, believe. With such a yardstick in general use, the engine designer may be able to designate the volatility of the fuel on which his product operates best, they stated. Variation in volatility ties in directly with the problem of adjustment and design of automatic chokes, they pointed out.

The limits of explosive mixtures with air vary between about 8:1 and 20:1. If an automatic choke is adjusted to deliver to the manifold mixtures within these limits, using a fuel of typical volatility, the engine will quite possibly miss or even stop if operated on a much more volatile fuel, because of the greater richness of the mixture supplied with the same setting, which may likely go beyond the limit of inflammability in the mixture. The choke may be provided with an easily adjustable feature, but it then ceases to be automatic, and many customers would then prefer to dispense with the automatic feature, the authors stated.

In the opinion of Boyd and his co-workers, the real advantage of more volatile fuels lies not so much in the additional power and performance obtainable—which increase they refer to as being of the order of three to five per cent—but in the higher volumetric efficiencies which may be practicable by allowing further reductions in manifold restrictions.

The trend toward reduced restrictions in the manifold is indicated by the extended use of downdraft carburetion, one of the main advantages of which is to obviate the necessity of high manifold mixture velocities which are necessary in the older updraft carburetor systems. Such a trend might eliminate at least part of the necessity for super-chargers in attaining high efficiencies.

Top car speeds and ton-mile efficiencies have increased remarkably during the last decade, even in the face of these and other design difficulties, these authors show. In 1926 top speed for cars averaged about 57 miles per hour, in 1935 this speed average is more than 80 miles per hour. This increase has been attained with no increase in engine size as compared to car weight. At the same time ton-miles per-gallon have increased from less than 22 to more than 31 at 50 m.p.h., a rise of almost 50 per cent, they said.

Engine and fuel improvement history has shown a continually shifting balance during the last few years, the automotive engineers point out. As the general average of fuels improved either in volatility or knock rating, engine designers have been eager to take advantage of this change in properties, with the result that design has progressed to overtake the trend in fuels. Working close to this limit of current fuel characteristics, compromises in performance are made, and in some points the limit is overstepped. Fuel refiners change their fuels to give the desired performance in the new designs, and the cycle continues.

The vapor locking tendencies of a fuel should be specified by at least two measurements, Neil MacCoull and E. M. Barber, the Texas Co., have concluded. These measurements, or volatility classification factors, should make possible the determination of (1) the initial boiling point of the fuel, and (2) the rate of vapor formation at temperatures above the I.B.P. of the fuel. In their opinion motor fuel can be so specified to obtain either easy starting or freedom from vapor lock, but not both at the same time, in 1934 and 1935 cars.

"It is our impression," these authors said in summary, "that the trend of car design, if left in the hands of the art departments, will subject fuel systems in 1936 to still higher temperatures, which will require the engineering departments to carry the double burden of increasing both the vapor handling capacity and the ease of starting with heavier gasolines."

This year's models subject the fuel to higher temperatures than do the 1934 cars, they found, but have less vapor lock trouble because of the greater vapor handling capacity of the fuel systems. The only way to obtain both easy starting and absence of vapor lock with volatile fuels is to so design fuel systems that vaporization temperatures are not reached. They found that the fuel reaches a temperature in steady running as high as 60 degrees above that of the atmosphere, and when idling after a run as high as 100 degrees F. above atmospheric temperatures are reached.

These data were obtained by experimental testing of different 1934 and 1935 models, representing 90 per cent or more of the car sales during those two years. From the information obtained, the authors concluded that it is difficult to conceive of a motor fuel possessing proper starting and warm-up characteristics which would not boil violently under the conditions observed. This overheating of the fuel in the system would make for more difficult starting after high temperature operation, since the fuel in the system, and especially that left in the carburetor, on which the engine must start, would be partially or wholly denuded of light fractions which are most serviceable in promoting easy starting.

Differentiation is made by Eisinger and Barnard between "front-end" and "total" volatility of fuels. Two series of fuels were tested, one of which was "zeroed" at about the same 20 per cent evaporated percentage and with widely varying 90 per cent points, the other series varying at the 20 per cent points with approximately the same 90 per cent points.

From these data it is indicated that it is a fallacy to go to extremes in either particular volatility effect, as they found that a similar result may be attained by a compromise be-

tween these two points. This means, it appears, that a relatively low 20 per cent point, combined with a fairly low 90 per cent point, will obtain the same desirable results as will result from an excessively low value at either one of these points.

The consensus of a large number of investigators is that, for every 10 degree F. temperature change made in manifold wall or mixture temperatures, there will be produced a change of about two per cent in the power available at the rear wheels of the car.

Much the same idea regarding the two types of volatility is advanced by G. G. Oberfell, R. C. Alden, and H. M. Trimble, Phillips Petroleum Co. They refer to an "intensive" and "extensive" factor in volatility. The intensive volatility is measured or rated by the Reid vapor pressure of the fuel; the extensive characteristic is measured by the Engler distillation results.

From comprehensive data obtained from systematic seasonal surveys of samples taken in 16 cities in various states in the MidContinent and midwest, they find that the greatest increase in volatility during the last six years has occurred at the 50 and 90 per cent points in commercial gasolines. The 10 per cent point has changed appreciably, but much less than the other two points. Volatility changes have occurred to about the same degree in the three commercial grades, they pointed out.

These data showed that the average winter gasoline for one season became the summer gasoline for the next year. From 1929 to 1934, inclusive, house-brand fuels changed as follows: 10 per cent 142 F. to 130 F.; 50 per cent, 259 F. to 234 F.; 90 per cent, 365 F. to 347 F. Other grades changed somewhat similarly.

It is not only unnecessary to remove the higher boiling components of motor fuels, but very undesirable from an economic viewpoint, according to statements made by H. W. Field and M. J. Fowle, Atlantic Refining Co., discussing the economics of increasing volatility.

The heavier components give no trouble in operation, with modern crankcase ventilation, they stated. Increased use of automatic chokes on modern cars will certainly require some standardization of warming-up characteristics, they believe.

Basing their calculations on motor fuels representing the 1934 typical and the 1935 light motor fuels as a means of comparison and stating cost changes in terms of percentages based on the cost of the 1934 grade referred to, these investigators found that, to make the light grade of fuel, would cost 29 per cent more than to produce the 1934 typical fuel under the same conditions. To make clearer the manner of reaching these conclusions, the following table (Table 5 in the discussion), is reproduced.

Calculating from these percentages, and assuming a refinery price of six cents maximum for the regular grade, the refinery price for the light grade should be about 7.75 cents. To give the same return to the refiner, without boosting the middleman's prices in addition, the retail price would then be two cents higher or thereabouts, for the finished fuel. This increases the retail users' price by about 10 per cent, and not 30 per cent, as the authors stated.

While not included in the paper presented by these authors, if the additional performance horsepower with more volatile fuels, reported by G. G. Brown, (See NAT. PET. NEWS, May 8, page 24-A) may be taken as typical and representative of average customer operating results, then the percentage increases in retail costs and in additional power obtained are approximately equal.

Other values calculated by Messrs. Field and Fowle show that to produce the straight-run gasoline for blending to make these types of fuel, the lighter fuel resulting would cost 23 per cent more. Likewise, the cracked portion of the fuel would cost 35 per cent more for the lighter fuel. Also, additional cracking as well as crude distillation capacity would be required, making these figures correspondingly higher, the speakers pointed out.

Sharp exception was taken to these conclusions, by different speakers, during the discussion at the S.A.E. sessions. G. G. Oberfell, Phillips Petroleum Co., stated in effect that increase of volatility is practicable at, not higher, but lower cost. He pointed out that large quantities of valuable volatile constituents, both in the natural gaso-

Table No. 5

Compositive comparative costs of refining motor fuels of volatilities corresponding to 1934 typical and 1935 light grades of fuels. (H. W. Field-M. J. Fowle).

Type of Gasoline		**1934**	**1935**
Crude Distillation — Charge—50's		12,000	12,000
Crude Naphtha	50's	4,200	2,400
Cracking Stock	50's	6,300	8,100
Fuels (Oil and Gas)	50's	1,500	1,500
Casinghead avails—5% Crude	50's	600	600
Total "Natural" Gasoline	50's	4,800	3,000
Cracking Stock—Charge—50's		6,300	8,100
Cracked Gasoline		3,150	2,723
Fuels (Oil & Gas)		3,150	5,377
Total & Distillation & Cracking—50's			
Crude Charge	50's	12,000	12,000
Casinghead	50s'	600	600
Crude Naphtha	50's	4,200	2,400
Cracked Gasoline	50's	3,150	2,723
Total Gasoline	50's	7,950	5,723
Debits—Crude at $2.00		$24,000	$24,000
Mfg. Cost—Pipestill		500	500
Cracking	at 22c	1,386	at 25c 2,025
Casinghead at $3.50		2,100	2,100
Total		$27,986	$28,625
Credit—Fuels at $1.00		4,650	6,877
Total Cost of Gasoline Produced		$23,336	$21,748
Cost of Gasoline—gal.		5.88c	7.58c
Per cent increased cost			29%

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"The annual report of our automotive department is very interesting. It reveals that the trucks we equipped with S. & J. Internal Hydraulic Valves last year haven't given us a tenth the trouble of other trucks as the aftermath of highway accidents. This valve system has saved gasoline and equipment—prevented explosions, and reduced damage claims. Hereafter I want every new truck equipped with the S. & J. Internal Hydraulic Valve System".

That's the way it usually happens. A few trucks are equipped with S. & J. Internal Hydraulic Valves. The management sits back and watches results. When the final check is made, the results are convincing. The management regards S. & J. valves as a good investment. First costs are low and maintenance is negligible. They are specified as standard equipment.

The nature of hydraulic valves insures operation at 100% efficiency or the driver immediately reports the difficulty, while mechanical valves may remain inoperative indefinitely without the management being aware of the defect. Hydraulic valves have no cables or rods which may pull the valves open in case of tank expansion from fire or other accident. Write for a copy of our new book "Transporting Inflammable Liquids With Safety". Individual units and the complete system are fully illustrated and described.

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line plants and in the refineries, are now going to waste, which can easily be used for this purpose.

G. G. Brown, University of Michigan, stated that a greater increase in performance may be obtained by an increase in volatility than by spending large sums to increase octane rating by increasing cracking facilities. It is necessary, he stated, to lower manifold temperatures. As an indicator, he believes that the 60 per cent evaporated temperature is the best index of volatility. As a generalization, he stated that the value obtained by dividing this 60 per cent temperature by two gives the approximate manifold temperature (maximum) which may be maintained for the best performance and proper vaporization.

No final steps were taken at the meeting regarding the matter of establishing some sort of volatility index. The consensus of opinion appeared to be that such an index is desirable, but attention was not focused on the details of any method for determining the index. The proposals of Oberfell and Alden, the methods used by Barnard and by Rendel have been, or soon will be, published for the information of technologists who are concerned with this problem.

Alcohol Motor Fuel Still On Trial in Europe

CLEVELAND, June 21.—The success of alcohol as a motor fuel has not been overwhelming among the various European countries in which it has been tried, according to C. C. Concannon, chief of the chemical division of the Department of Commerce. Some countries, notably Germany, appear to have experienced considerable success, he said, while others, after experiments, have abandoned the idea or modified requirements.

The considerable increase in the use of alcohol as a motor fuel in recent years is attributed to several factors, of which the desire to relieve agriculturists is said to be an outstanding motive. Generally legislation requiring alcohol calls for

domestically produced alcohol. The scarcity of exchange in some countries, which has made it difficult to obtain imports in sufficient quantities, and the growth of economic nationalism are also important factors. The increase has been particularly noticeable in countries which have little or no petroleum resources, it is said.

Builds Spark Ignition Heavy Oil Engine

DETROIT, June 20.—A new line of oil burning, carburetted, spark ignition automotive and stationary engines is announced by Continental Motors Corp., of Detroit and Muskegon, Mich. According to the claims of the company, these engines will reduce the operating expense of trucks, tractors, etc., from 30 to 40 per cent, depending on the price of furnace oil in different localities.

The new engines are the overhead valve type, especially suited to agricultural tractors and industrial tractors and trucks. No. 1 furnace oil is used as fuel, and, it is claimed, with good results in efficiency, acceleration and with greater economy than where gasoline is used.

Six-cylinder heavy duty models in 381, 428, and 501 cubic inches displacement are available. These engines apparently are similar in general principles to the spark ignition oil engine, the Hesselman, announced two years ago by the Waukesha organization.

California NRA Ruled Out

LOS ANGELES, June 22.—The California Recovery Act of 1933, known as the "little NRA," has been ruled unconstitutional by the California Court of Appeals for the second district because of the decision of the U. S. Supreme Court in the Schechter case. The decision freed Glenn Downing, Long Beach oil producer, of the charge of violating the act by producing oil in excess of the quota assigned to him by the oil umpire.

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The 2" Oceco Pump delivers up to 100 gallons per minute. Larger sizes for trucks, bulk plants, refineries, gathering lines.

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JOHNSTON & JENNINGS CO.
(Oceco Division)
877 Addison Road **Cleveland, Ohio**

Visiting Around the Refineries

By Arch L. Foster

TAXATION of diesel fuel oils, recently adopted in England, has changed materially the balance of economy in that country, asserts Ewart Guy, director of Guy Motors, Ltd., and presented in the June 1 issue of *Petroleum Times*. Beginning with August 1, 1935, eight pence (about 16 cents) per gallon tax will be collected on diesel fuel. This same rate has been paid on motor fuel in England for some years.

This system appears to be fair and undiscriminatory. If diesel-powered vehicles also use the public highways, then a pro rata portion of the cost of construction and maintenance of these roads should be borne by those users. If diesel-powered vehicles compete with gasoline-powered vehicles, no artificial handicap should be placed on either power source, to its own injury and the advantage of the other.

The Guy company supplies gasoline and heavy oil engines alike for automotive power, and may be considered a nearly impartial judge of the situation. Its director estimates that the "balanced mileage figure per annum" of vehicles has been increased greatly by the imposition of this heavy fuel tax. That is, this "balanced mileage" is the annual mileage at which the two types of vehicle power have the same operating costs per mile. Above this mileage the diesel power has the advantage; below this mileage, gasoline is the more economical source of power. Guy averages these figures as follows, as taken from the *Times*' editorial pages:

	Balanced mileage figure, per annum	
	Old	New
Vehicle capacity	Taxation	Taxation
Three to four tons	16,500	25,500
Heavier types	19,000	31,000

In short, it appears that the mileage per year per truck which an operator expects to use must be greater before a diesel engine is justified.

This action, the same which may be expected in this country at any time, gives one more reason for concerted action by the oil and automotive industry in combating the ridiculous but dangerous trend toward super-excessive taxation of motor fuels of any kind. What is even more to the point, it is a warning to diesel builders that the diesel must attain and maintain its position on the strength of its practical economy under competitive price conditions, rather than to rely on an artificial price differential for sales argument, a differential which will probably disappear at any time.

* * *

THE increased use of vapor balloons, pontoons roofs, breather roofs and other pressure-vacuum valves on light oil storage tankage shows clearly the value which refiners place on saving the light vapors otherwise lost to the air.

With the present trend toward the use of more volatile motor fuels, vapor saving devices are becoming doubly important. Refinery odors in the vicinity of towns and cities also constitute a problem which induces activity on the part of health departments. We note particularly the action of French authorities since the recent development of the refining industry in that country, especially in the vicinity of Le Havre. Because of the insistence of authorities there that "emanations" from the refineries be reduced, nearly two million barrels of storage for crude and refined products is provided with Wiggins pontoon roofs, at the same time saving vapors and preventing friction with authorities unaccustomed to the exigencies of petroleum refining and its odors.

These tanks are located principally in the Le Havre-Seine River area, and are the Raffineries de la Vacuum Oil Co. and the Standard Franco-Americaine de Raffinage, both at or near Port Jerome.

It is understood that an organization has been formed to force refining companies to prevent vapor losses, in the interest of public health in France.

* * *

FEDERAL Specification VV-L-791a, which is Sect. IV, Part 5, of the Federal Standard Stock Catalog, supersedes Fed. Spec. VV-L-791 of Oct. 3, 1933, and becomes effective July 1, 1935. This publication has superseded the old Bureau of Mines Technical Paper 323-B, Federal Specifications and Methods of Testing, familiar to all petroleum chemists.

The new edition contains the latest revised methods of testing and sampling lubricants and liquid fuels employed by the government in all departments. It may be obtained from the Superintendent of Documents, Washington, at the price of 15 cents; stamps in payment not accepted.

* * *

WATER flooding of oil sands has given the Bradford fields a new lease on life. An interesting fact is that the efficacy of this method was discovered by accident, at a time when, it is said, permitting water to enter the producing horizon was illegal.

Casing on a well in that field corroded through, permitting water from an upper sand to reach the producing stratum. For some time it was not known why this area was increasing its production. When the situation was explained, it was finally made clear that this means could be employed to increase total recovery of the valuable Bradford crude.

The results of that accidental experiment are well known.

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You need Dubbscracking

Dubbscracking gives you the biggest yield of the best gasoline from any charging stock—and at lowest cost—royalty and all

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SELLING AT STATIONS

As Seen by N. P. N. From the Road

Station Men Buy Dust Cloths in Case Lots

Women are causing salesmen at Skelly Oil Co.'s No. 14 station in Tulsa to order the company's dust cloths in case lots.

Manager Orvil Core (shown in accompanying picture), and his assistants, Richard Spires and Ed Flaherty, make it a point always to carry one of the dust cloth packages out to the car when a woman customer drives into the station. They hand the package to the woman for inspection while they service the car.

Then one of the attendants will step to the window, and remark that the cloth certainly is a handy thing.

"Here's one I've carried around and used until its pretty dirty," he'll say as he pulls a cloth out of his pocket, "but it still does the work."

With that he begins to wipe off a portion of the hood.

"And the nice thing about these cloths," he'll continue as he keeps working on the hood, "is that we can wash them out and they will still do the job.

"And the women who have bought them tell us they are fine for furniture."

That little sales talk and demonstration on the hood convinces women customers, those attendants have found. And more than one husband in that neighborhood is finding the price of one or more dust cloths on his monthly bill from Skelly's.

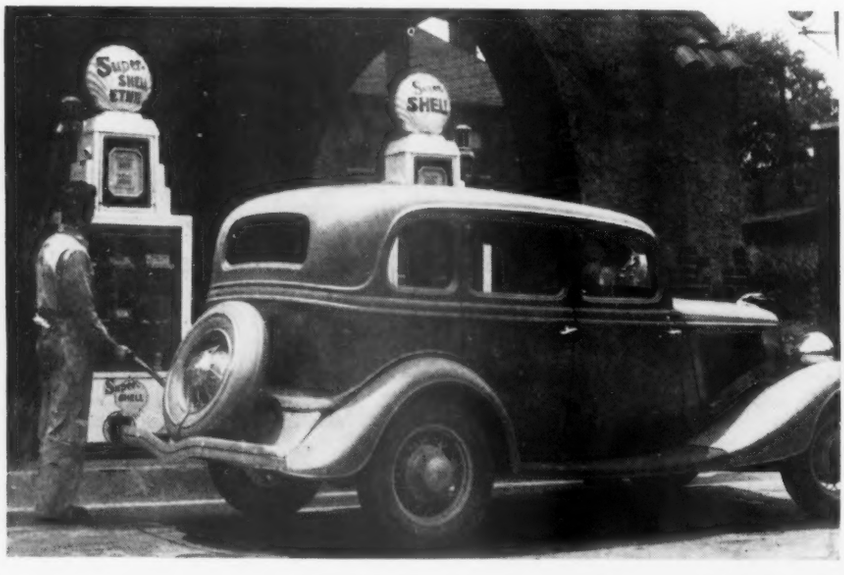
Computing Pumps Add To Gasoline Sales

Computing pumps are adding 15 to 20 gallons of gasoline a day to the sales volume at one of Campbell Oil Co.'s service stations in Chattanooga, Tenn., because the station men watch the "change."

Located on one of the main highways just outside the business district, a considerable number of tourists stop at the station. It takes only a second or two to call to the customer's attention the fact that "we can put in enough gasoline to make it even change."

The station is listed as the best of the Campbell stations from the standpoint of gasoline and oil sales. The motor oil sales are running 3 per cent of the gasoline sales. The station is the only one in Chattanooga, it is said, which has no other station within six blocks.

Howard Acuff is manager, and Grady Bennett and James Watt station salesmen.



New Gasoline Announced By W. U. Messengers

A novel bit of promotional effort was employed by the Republic Oil Co., Pittsburgh, in introducing its new gasoline and service stations in the neighborhoods served by these stations.

Following an introductory newspaper and billboard campaign announcing its entry into the Pittsburgh district with its own branded gasoline and its own stations, the Republic com-

pany opened its retail outlets for business June 1. On the day before, Western Union boys were used to deliver personally to each home or store in the neighborhood of every station a "Special Flash" bulletin which carried a message inviting that person to try the new Republic station near him.

According to A. V. Crouch, Republic advertising manager, this scheme not only brought a good response from the various neighborhoods, but it created good will and friendly feeling between the station managers and the company that in itself was worth the effort and expense.

The "Special Flash" read as follows: "Tomorrow—Will you please accept this as an invitation to turn in at our trim, spotless, newly decorated station with the red, white, and blue pumps for a first tankful of Republic Gasoline . . . Triple shielded at the pump globe . . . Our guarantee to you of perfection in gasoline. It certainly will please you . . . and we dare say, so will our superior station service. Republic's announcements have appeared in a number of ways . . . but we just can't resist coming direct to you with this invitation for our mutual benefit."

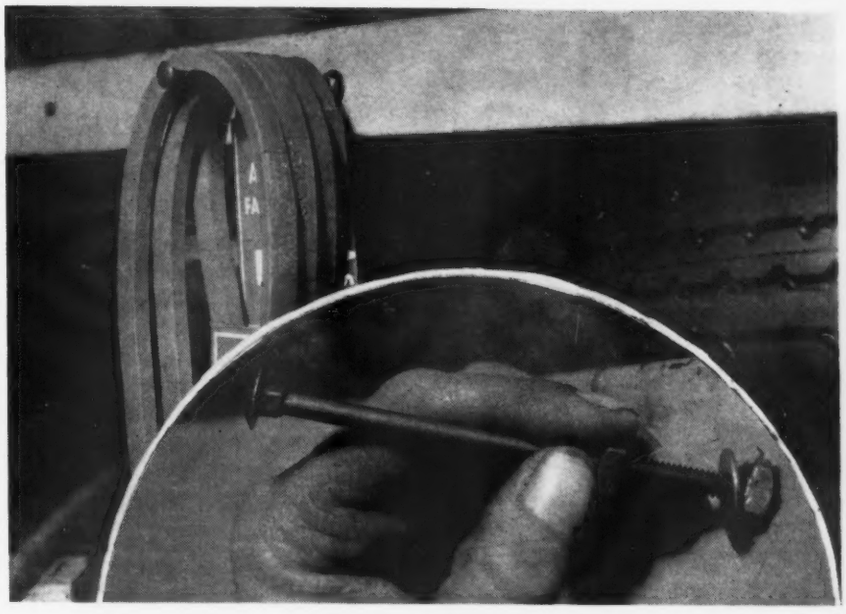
Easy Method for Station To Display Fan Belts

John J. Ganahl, assistant manager of a large service station in St. Louis, worked out a method of displaying fan belts which is well deserving of mention.

There are small slots in the tubing of ordinary metal tire display racks. By inserting ten inch bolts into these slots simple and effective hooks are made upon which fan belts and radiator hose can be hung.

The only problem encountered lies in the fact that the tubing is generally triangular in shape and that the slots are cut in the face only and do not extend through.

Mr. Ganahl describes the method of attaching the bolts as follows: "Turn a nut and washer about a third of the way on a 10 inch bolt. Turn another nut onto the tip of the bolt. With a heavy screw driver or tire tool pry the slot slightly open and insert the tip of the bolt. By closing the slot again and turning the other nut and washer up snug, a sturdy hook is fashioned."



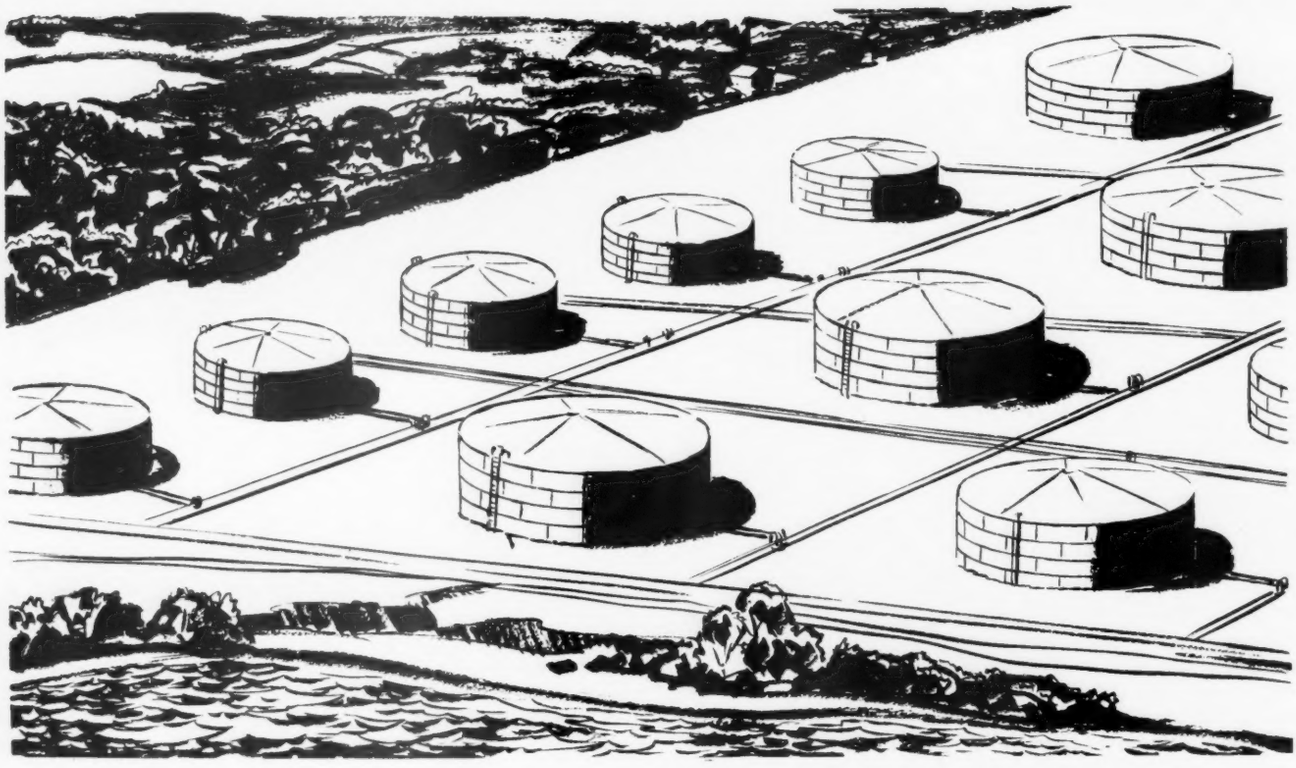
Device Prevents Sloppage Due to Air Pressure

There was always considerable spillage when the driver dumped gasoline from his tank truck into the tanks at the Dawkin Service Station in Memphis.

The construction of the fill pipes were such that no air relief was provided. In spite of all the care and patience the driver exercised, gasoline gurgled from those fill pipes and spilled onto the sidewalk while a dump was being made.

The fill pipes' openings were on the street curb, but the pump tanks were some 15 or more feet away on the opposite side of the sidewalk. Some four or five inches from the openings, elbows had been placed in the fill pipes and they had been laid horizontally just beneath the sidewalk and concrete drive to the tanks. This permitted the building up of considerable air pressure in those horizontal sections of pipe, and the only way the air could escape was around the fill nozzle.

A home-made device of pipe nipples and fittings, however, solved the problem. The device is made from 2 inch and 1.5 inch pipe fittings. The 1.5 inch nipples and fittings form that part sticking from the side of the 2 inch pipe, and provide the necessary air relief. And the main or larger part of the device is long enough to provide sufficient "drop" from the nozzle before the gasoline starts its horizontal journey to the tanks.



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General American's New Houston Terminal Is At Your Service . . .

General American's newest and most modern terminal is located on the Houston Ship Channel. It enjoys most favorable rail rates to and from East Texas and the Southwest; low water rates to all parts of the world; and connects directly with pipe lines from all major oil fields.

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Here is every facility proven useful in the nation-wide system of General American terminals. Plus recently developed equipment for safety and speed of handling.

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General American's five strategically located terminals bring you increased profits by providing your own unsurpassed facilities for the handling of any liquid commodity . . . without investment on your part. No matter what you ship, or where, a General American terminal will prove an efficient, money-saving, indispensable, part of your operation.

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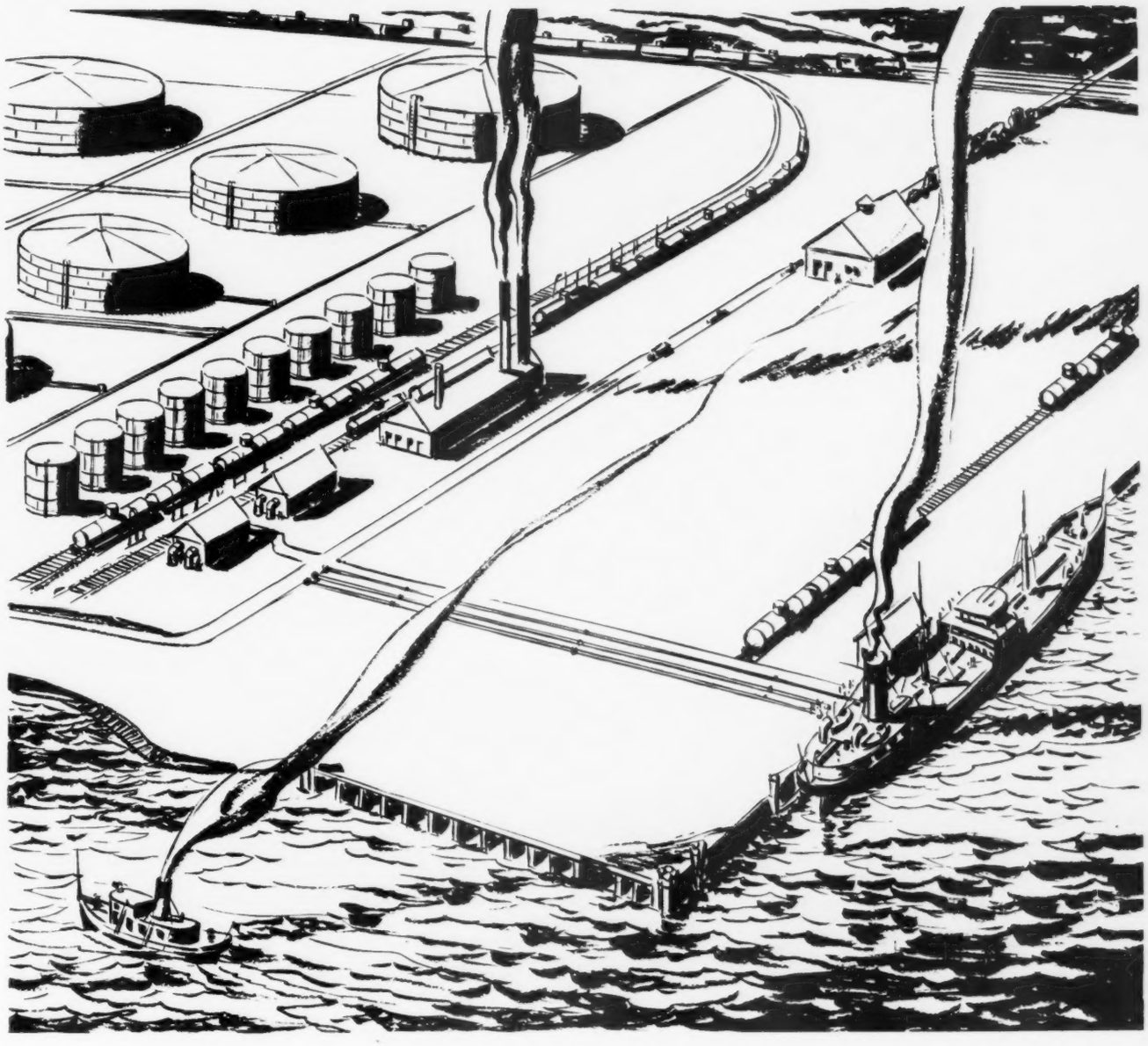

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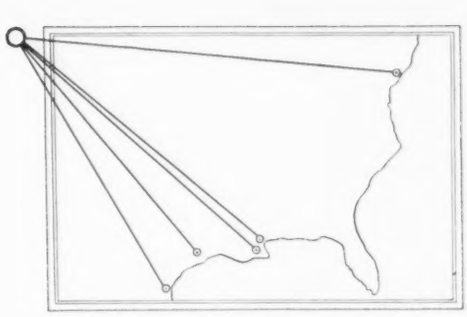

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Dealers Should Not be Mislead With Half-Truths

By E. L. Barringer
N. P. N. Staff Writer

CHICAGO, June 21

ONE of the greatest needs of the dealers in petroleum products today is sound and clear thinking on the economics of the marketing branch of the oil business.

Rash, wild statements, based on half the facts, and twisted to arouse and inflame dealers, fail to serve their purpose and in the end will react to the detriment of the dealers themselves. One of the greatest services of the various dealer organizations would be to acquaint their members with actual facts and conditions in the marketing of petroleum products that have to be reckoned with by everyone in the business, if it is to be carried on upon a sound basis.

Only too often, however, do statements appear similar in nature to those in a recent issue of a Detroit dealers house organ. This article begins with a statement about amiable relationships between dealers and suppliers being severely taxed on account of retail price advances since the dealer's margin was reduced in Michigan April 1.

"Since the dealer has seen the major company increase its profit almost 2.5 cents a gallon since the 23rd of March without profit to him. . . . ." the article continued.

If the amiable relationships between the dealers and suppliers have been taxed, a similar strain apparently exists between the author of the article and his economics. The statement about major company profits increasing 2.5 cents is typical of a lot of loose thinking today on the part of some dealers about prices, spreads and margins.

That statement is obviously misleading, even on first reading, but a check of price information available to anyone in the industry shows how sane economics have been utterly disregarded. By comparing the price of gasoline laid down in Detroit, with service station prices, and the various margins, as in the following table, it is evident who has been receiving the lion's share of the spread:

	Laid-down Price	S.S. Price	Spread	Dealer Margin	Jobber's Margin
	(Figures in Cents Per Gallon)				
Jan. 1	12.46	15.5	3.04	4	— .96
Feb. 4	12.21	17	4.79	4	+ .79
March 18	12.58	17	4.42	4	+ .42
March 25	12.77	17.3	4.53	4	+ .53
April 1	12.9	18	5.1	3.5	+ 1.6
May 6	13.27	18.7	5.43	3.5	+1.93
June 3	13.46	18.7	5.24	3.5	+1.74

The laid-down price was determined by taking the average of middle octane bracket gasoline in Platt's Oilgram, midwestern market, plus freight and state and federal taxes, for dates shown. The service station price is for second grade or regular gasoline, posted by the Standard Oil Co. of Indiana.

The table shows the retail price has advanced 3.2 cents since the first of the year, also, that the dealer's margin was cut .5 cent on April 1. Taking these facts alone, without looking at the whole picture, a pretty yarn can be spun about how the public has been robbed, and the poor dealer ground in the dirt, because a cut of .5 cent on dealer margins and a 3.2 cents raise to the public looks like a 3.7 cent boost in the return to the supplier, but that is far from the whole picture.

In the first column, laid-down price, is the story of rising tank car markets, and two points are quite evident. First, the tank car market usually begins to climb at the approach of the heavy consuming season, and second, the refiner's recovery has been far below what he expected, and claims is necessary, with $1 crude.

The service station price column raises the question as to why the Detroit gasoline price was only 15.5 cents on Jan. 1. Lots of jobbers in Detroit, and the rest of Michigan, would like to know why prices were not stabilized until the spring of this year, when the rest of the middle west started to return to normal in early December. Detroit motorists have been getting bargains in gasoline for some years, and raising prices to fair retail levels certainly is not soaking the public.

The final column shows the sorry plight of the jobbing end of distribution. After paying the dealer 4 cents a gallon to market gasoline, on Jan. 1, the wholesale marketing end was almost a penny in the hole. Under current margain schedules the jobbing margin is supposed to be 2 cents, but this price was approached only once in the table, on May 6, and the rise in tank car prices since that date of almost .2 cent has cut the jobbing margin by that much.

Dealers have received a steady rate of margin, as indicated in the dealer margin column, irrespective of the tank car price, retail price being subnormal, or the total spread. If the dealer wants to yelp because his margin was cut .5 cent, and he has that right of course, he should temper his complaint by looking at the ups and downs of the tank car price to the refiner, and the margin for jobbing, and then consider that his rate of margin is guaranteed, regardless of what happens to other prices.

There are some dealers who have a sane, and sound, view of margins and prices, and who know the economics of marketing. Other dealers, however, apparently have never thought about marketing economics outside of their own margin.

Stabilized Fuel Oil Marketing Practices Needed, Distributors in East Told

By T. W. Watson
N. P. N. Staff Writer

NEW YORK, June 20

PRICE cutting practices must be eliminated if the fuel oil distributing business in the east is to go through a profitable winter, despite anticipated increases in the volume of the business, it was stated at the dinner meeting here June 19 of the fuel oil trade associations.

One speaker predicted the volume of fuel oil distributed would equal that of gasoline in a few years, if the present rate of installation of burners continued. He said refiners would have to revise their operations to make more fuel oil.

Any company can go out and build up business by cutting prices but they will only keep that business until some other company comes along and in turn cuts their price, said L. V. Nicholas, president of Warner Quinlan Co. Price cutting does not show courage, only a lack of vision, he said.

Two of the prime factors in unsettling markets are a lack of confidence in competitors and a willingness to believe buyers and salesmen's reports of "cut" prices without an investigation as to their truthfulness, he remarked. Buyers as a rule are better organized than the sellers and consequently about 10 per cent of the volume, if bought at a low price, will "upset the apple cart," Mr. Nicholas continued.

As one remedy for stopping the spread of misinformation as to what different oil companies are doing in the way of marketing practices and prices, Mr. Nicholas suggested the establishment of a central clearing house for the fuel oil group. Such a clearing house could furnish information on credits and also could clear complaints as to price cutting and unfair marketing practices, he said.

Mr. Nicholas scored the policy of the government, under the NIRA, of insisting on oil companies adopting codes and increasing wages and then forcing highly competitive bids to obtain government business. The government's practice of insisting on "flat" price bids from the oil companies also was a factor in establishing poor marketing conditions, he stated.

Wm. C. McTarnahan, president of Petroleum Heat & Power Co., also took a rap at the "price" method of obtaining business. He suggested that oil companies pay more attention to developing new business on a profitable basis and quit trying to "chisel" away from their competitors business that had been already developed.

Mr. McTarnahan predicted that, if the present rate of growth in the oil burner and fuel oil business continued, it would rival gasoline consumption in 1939. He predicted that refiners will have to revise their operations to make more fuel oil and less gasoline by that time. The present rate of new automatic burner installations is 120,000 yearly, it was stated.

E. E. Overton, bulk sales manager of Shell Eastern Petroleum Products, told the gathering a more cooperative effort would now be needed to prevent unfair marketing practices since the restraints imposed by the code were removed.

None of the speakers, nor Wm. R. Quattrocchi, Warner Quinlan company and president of the New York group, who presided, commented on the recent reports concerning a "fuel oil coordinator," which have been circulated recently. There was no discussion from the floor at the meeting, although it had been expected that this subject might possibly come up.

Several prominent men in the eastern fuel oil industry have voiced the opinion that a set of fair trade practices should be adopted by the industry to head off possible outbreaks of price cutting and bad marketing practices during the coming season. These rules, it was thought by some, should be administered by a coordinator who would settle complaints as to price cutting and other similar disturbances.

Approximately 600 oil men attended the dinner, which was sponsored jointly by the Fuel Oil Association of New York City; Westchester Oil Trades Association; Fuel Oil Association of New Jersey and the Long Island Oil Terminal Association.

23 Nebraska Counties Sue on 'Gas' Tax

LINCOLN, Nebr., June 22.—Twenty-three counties in Nebraska have filed suit to set aside the recent one-cent increase in the gasoline tax to provide relief funds.

The Nebraska Petroleum Marketers, Inc., intervened in the suit to obtain refunds to oil companies on the amount paid to the state on this tax if the case of the 23 counties is successful.

Part of previous New Deal measures in Nebraska was the granting of federal funds for relief providing counties increased property tax rates to raise money for such purposes.

The 23 counties involved in the gasoline tax case did not increase tax rates and consequently did not share in federal grants for relief. Relief was not an urgent problem in these counties and officials did not obey New Deal dictates.

Attorneys from these 23 counties now are attacking the additional 1 cent gasoline tax. Revenue from this tax, in effect until June 1936, is to be matched by federal funds for old age pensions. Since these 23 counties will not share federal funds or their portion of the additional gasoline tax, attorneys contend the one-cent increase is unconstitutional.

Oil companies have paid the additional tax for April and May. Intervention by the association is to obtain a refund.

N. P. N. SEMI-ANNUAL INDEX

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Refers Action on Bill

LOS ANGELES, June 21.—No action has been taken as yet by Governor Merriam on the bill to legalize whipstock drilling into the state-owned tidelands at Huntington Beach. The bill establishes a royalty of 16 2/3 per cent on oil recovered from wells already drilled from the bluff above the beach by independent operators. Standard Oil Co. of California, which controls a strip of land between the bluffs and the tidelands, has not whipstocked into the state lands but appears to be in a preferred position if it should decide to do so.

The proposed 4 per cent severance tax was tabled just prior to the adjournment of the state legislature. Defeat of this measure was attributed to the active opposiion of practically all branches of the oil industry, including major companies, independent producers, and field workers.

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Bus-Truck Bill Applies to Some Phases Of Operation of Company Vehicles

WASHINGTON, June 22

THE bus-truck regulation bill is likely to be taken up next by the House interstate commerce committee after it finishes with utility-holding company legislation next week.

While the 64-page bill is expressly limited to motor carriers operating in interstate or foreign commerce, it may affect a considerable number of persons in the oil industry. As it passed the Senate, the bill (S. 1629) aims at giving the Interstate Commerce Commission quite a few of the regulatory powers over motor carriers that it now exercises over the railroads.

Provisions on "contract carriers by motor vehicle" might be construed to apply to owners of tank trucks engaged in the business of hauling gasoline and other products which they themselves do not own. Even company-owned tank trucks hauling the company's products might be subjected to regulation of maximum hours for operators and safety requirements, if the commission found it necessary.

The test of whether a motor carrier is within the scope of the proposed legislation is found in the definition of "interstate commerce," as follows:

"The term 'interstate commerce' means commerce between any place in a State and any place in another State, whether such commerce moves wholly by motor vehicle or partly by motor vehicle and partly by rail, express, or water."

A similar definition of "foreign commerce" is also included. This definition would seem to cover truck movements wholly within a state where the commodity carried was received from or transferred to a rail, water or other carrier which had moved it or is to move it across the state line.

A "contract carrier by motor vehicle" is defined as any person not covered by the definition of "common carrier" who "under special and individual contracts or agreements, and whether directly or by lease or any other arrangement, transports passengers or property in interstate or foreign commerce by motor vehicle for compensation."

Besides persons engaged in the business of hauling petroleum products, this definition might possibly cover "commission agents" and others who, although they in most instances own only the truck chassis, haul gasoline and other products under contract for stated compensation per gallon or other contractual arrangements.

THE occasional hauling for another person of a truckload of gasoline, however, would probably be exempt from such regulation, even though moving in interstate commerce.

Listed among the "exemptions" is, the following:

"The casual, occasional, or reciprocal transportation of passengers or property in interstate or foreign commerce for compensation by any person not engaged in transportation by motor vehicle as a regular occupation or business."

A "private carrier" is defined, as follows: "The term 'private carrier of property by motor vehicle' means any person not included in the terms 'common carrier by motor vehicle' or 'contract carrier by motor vehicle,' who or which transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for the purpose of sale, lease, rent, or bailment, or in the furtherance of any commercial enterprise."

As regards such "private carriers" the bill would authorize the commission to establish, "if need therefor be found, reasonable requirements with respect to the qualifications and maximum hours of service for employes, and safety of operation and equipment."

The commission would also be authorized to investigate and report on the need for federal regulation of the sizes and weight of motor vehicles and combinations of motor vehicles and of the qualifications and maximum hours of service of employes of all motor carriers and private carriers of property.

In regulating "contract carriers," the commission, according to terms of the bill, "may establish reasonable requirements with respect to uniform systems of accounts, records, and reports, preservation of records, qualifications and maximum hours of service of employes, and safety of operation and equipment."

Every "contract carrier" would be required to "file with the Commission, publish, and keep open for public inspection, in the form and manner prescribed by the Commission, schedules or, in the discretion of the Commission, copies of contracts containing the minimum charges of such carrier for the transportation of passengers or property in interstate or foreign commerce, and any rule, regulation, or practice affecting such charges and the value of the service thereunder."

No reduction could be made except after 30 days' notice to the commission, nor could any "contract carrier" charge less than the charges he had filed.

After a hearing and finding, the commission might prescribe such minimum charges as desirable in the public interest.

There is no mention of the filing or prescribing of *maximum* charges by "contract carriers."

Permits would be required for all "contract carriers" operating in interstate or foreign commerce or within any reservation under the exclusive jurisdiction of the U. S. (the District of Columbia, Army reservations and the like). Any "contract carrier", who was operating in the same territory in 1934, could obtain a permit on application within 120 days.

Other "contract carriers" would have to make a showing that they were "fit, willing, and

able properly to perform the service of a contract carrier by motor vehicle, and to conform to the provisions of this part and the lawful requirements, rules, and regulations of the commission thereunder, and that the proposed operation, to the extent authorized by the permit, will be consistent with the public interest and the policy" of the proposed law.

The bus-truck regulation bill was drafted by Federal Transportation Co-Ordinator Eastman and introduced by Senator Wheeler, of Montana, chairman of the Senate interstate commerce committee. It was reported to the Senate and passed April 15 in substantially the same form.

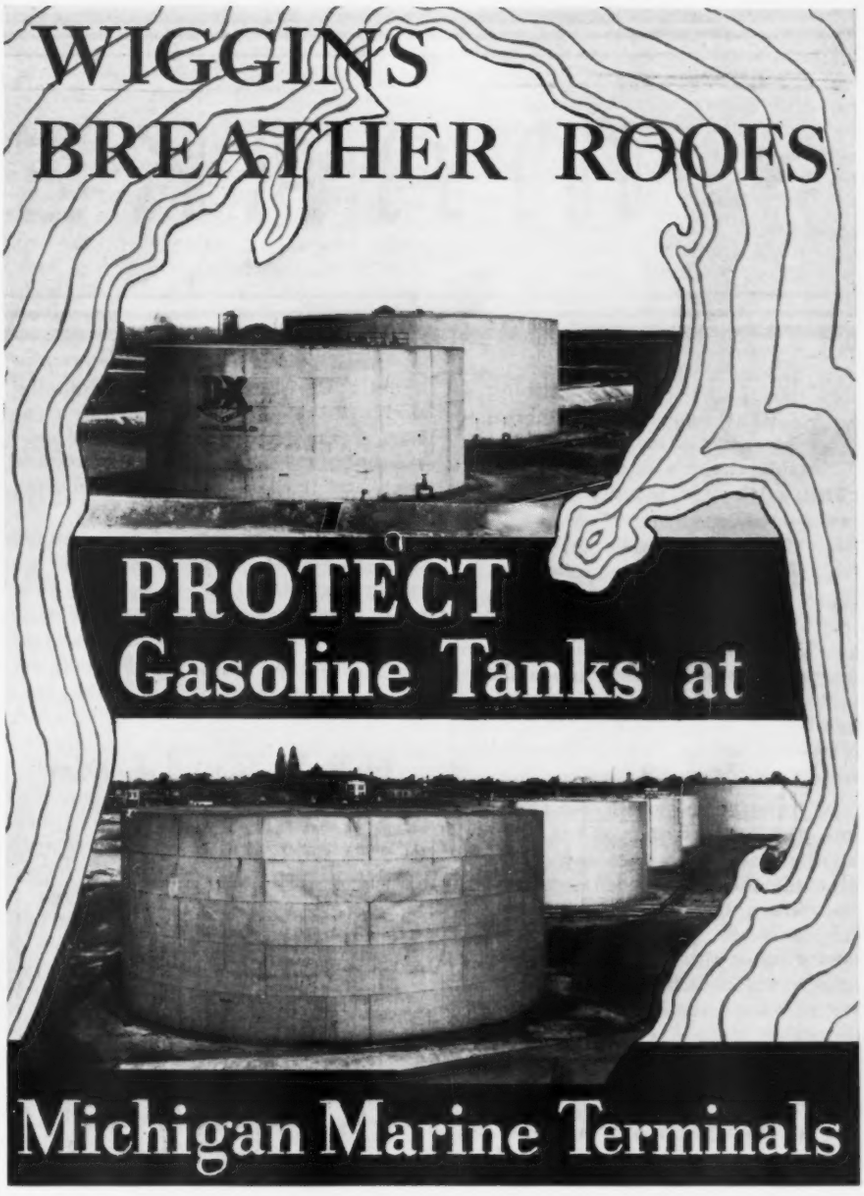
S. O. California Enters Canadian Markets

LOS ANGELES, June 21.—Standard Oil Co. of California has entered the Canadian refining and marketing field through organization of a wholly-owned subsidiary, Standard Oil Co. of British Columbia.

Approximately $1,000,000 will be spent on the erection of a refinery at Burnaby, the purchase of an independent service-station chain, and the building of bulk plants to be operated by authorized distributors. Immediate work will start on the refinery, which will occupy a 55-acre site, and it is expected it will be completed early in December. Terminal facilities will include a new 400-foot wharf for oil tankers.

Operations of the new company will be centered for the present in Vancouver, Victoria, New Westminster, and Nanaimo, where five service stations are already under construction. These retail outlets will be operated by Standard Stations, Ltd., under the same general policies adopted by the company in other Pacific Coast cities.

Until completion of the new Burnaby refinery, gasoline and other petroleum products will be shipped from the parent company's California plants. However, greater economy of operations will be possible when the company can bring in duty-free crude oil and also escape the import duty on refined products.



MANY marketers have reduced their evaporation losses by using Wiggins Breather Roofs on standing storage tanks at bulk plants. Typical installations have been made by the Theisen-Clemens Company, St. Joseph, Michigan, and its subsidiary companies at Bay City, Michigan and Detroit. At these three points, they have a total of 13 gasoline tanks equipped with Wiggins Breather Roofs. The tanks have an aggregate storage capacity of 400,000 bbls. and handle approximately 33,000,000 gallons annually. The gasoline is received by tanker four or five times a year so in many cases it remains in storage several months.

The total loss in handling gasoline through these terminals is less than ½ of 1%, with the tanks equipped with Wiggins Breather Roofs. J. J. Theisen, President of the Theisen-Clemens Company, reports that this loss is much less than it would be if ordinary cone roofs were used on the tanks.

The Wiggins Breather Roof is only one of the types of modern storage equipment which we build for marketing service. Wiggins Pontoon Roofs are in wide use for working tanks. Hortonspheroids for pressures from one to twenty lbs. per sq. in. are also used for high test gasolines and blended products of high volatility. Ask our nearest office for information or quotations on Wiggins Roofs for your existing tanks or new pressure storage.

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Detroit.....1513 Lafayette Bldg.
Dallas...1439 Dallas Athletic Club Bldg.
Birmingham.....1534 N. Fiftieth St.
Houston.....2919 Main Street
Tulsa.....1607 Thompson Bldg.
San Francisco.....1060 Rialto Bldg.
Los Angeles.....1322 Wm. Fox Bldg.

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• MARKETS •

CLEVELAND, June 24

NOTHING appeared on the oil market horizon last week to disturb the general price structure which, with only temporary setbacks, has pointed consistently higher since this year.

At the same time markets lacked the punch necessary to give them another push forward. Crude markets were steady in all areas. With few minor exceptions, retail gasoline markets held their ground. But jobbing demand—the mainstay of tank car markets—was sorely lacking in virtually all refinery districts.

Despite the fact that temperatures rose and the weather cleared in the middle western territory and good gasoline weather continued to prevail in the eastern areas, jobbers still held to the sidelines. Inclement weather, among other things, had been blamed quite generally for the lack of jobber buying which has become increasingly noticeable since the middle of May. With the favorable turn in the weather and jobbing demand still lacking, market observers quite generally agreed that it was uncertainty over the federal gasoline and lubricating oil tax extension that was the deterring factor. Once this question is disposed of definitely, a steady increase in jobber buying was expected to be forthcoming.

All evidence last week pointed to extension of these taxes. But at the same time jobbers held back against the bare chance the improbable would happen.

Faovrable developments which would tend to influence market prices, more than offset the few unfavorable developments last week. It appeared quite certain that there would be no letup in the efforts of Texas officials to hold crude production in the state to reasonable market demand, and thus restrain the state from again being a depressing factor on the general oil price structure.

At the request of oil enforcement officials of several states, the Interior Department estimated the reasonable market demand for crude from the larger producing states in July. In the department's calculations, Texas was alloted 1,064,000 barrels. Subsequently the Texas Railroad Commission cut the allowable production for East Texas from 3.4 to 3.3 per cent of the hourly potential in that district, and fixed the daily allowable for the state at 1,063,387 barrels.

More marketer associations joined the ranks of those which believed the market stabilization work that has been underway since early March should be continued. Nebraska marketers even got so far as the working out of a plan to raise the necessary funds to carry on the stabilization work.

California had its ups and downs last week, but the noteworthy side of this question was the fact that any surpluses which have been accumulated there have not as yet found their way into inter-coastal market channels.

Closer control of crude production in California, coupled with the shutting down of several independent refineries, brought temporary relief from the depressed prices which have prevailed in the southern California retail market since the oil code was annulled. Relaxation of this control accompanied by the failure of marketing companies to adhere to the higher posted price schedules, however, caused prices to react, and the California situation again became a factor to be watched as to its possible effect on the coastal markets.

Generally speaking, retail gasoline markets east of the Rocky Mountains held at the higher prices reached thus far this year. Boston and Providence prices remained below normal. The Buffalo market lost some ground and there was evidence of price cutting at a few points in the Carolinas. Aside from this, however, retail markets generally appeared to be in as good shape as at any time since stabilization work was started under the oil code in March.

Tank car markets for gasoline showed no reactionary tendencies. Light fuel oil prices continued on the downward swing which started two weeks ago. Clearing weather, however, was expected to bring a return of farmer consumption of tractor fuels. It was thought this would be sufficient to bolster the light fuels until storage buying by jobbers of heating oils for next winter gets underway.

Lubricating oils were tending higher in all tank car markets, but actual price advances were not forthcoming. Inventories were well held.

Trading in wax markets remained at low ebb. Foreign buyers, however, showed more interest in making forward commitments. Several market observers pointed out that, in the past, a renewal of interest in wax futures has almost invariably signaled active buying and rising prices.

N. P. N. Gasoline Index

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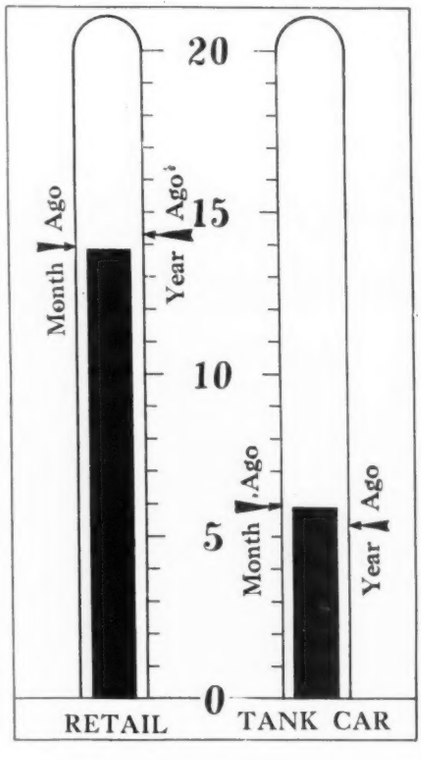


Retail index is an average of 50 cities ex-tax, and tank car is a weighted average of 13 wholesale markets for middle octane gasoline. The gasoline price index this week represents the following prices in cents per gallon:

Date	Retail	Tank Car
June 24	13.83	5.93
Month ago	13.92	5.99
Year ago	14.25	5.32

Chicago

Market Featureless

THE Mid-Western tank car gasoline market was without feature the week ended June 22. On the whole, it presented a picture of hesitation and anticipation.

The hesitation was due mainly to the extremely unfavorable motoring weather which has been prevailing over the greater portion of the Standard of Indiana territory, and to the uncertainy over continuation of the federal gasoline tax.

Most sellers anticipated a more active buying market if and when the tax muddle is definitely cleared, and the weather improved to the extent where replacement buying by jobbers will again become an active factor in absorbing material which has been overshadowing markets. The market thus far has been kept free of surplus by active inter-refinery trading.

Refinery buying, and the disposition of most sellers to hold material for at least published low prices resulted in no appreciable surplus entering the market. Only occasional offerings were shading published prices, and for the most part they were distressed or intransit cars.

As the week drew to a close, the weather began clearing. Indications pointed more strongly to continuation of the federal tax. Interest in gasoline increased somewhat. Spot sales, however, have shown no decided increase, although contract sellers reported gasoline was being ordered out more freely the last few days of the week.

East Texas again was becoming a factor in the Mid-Western tank car gasoline market, although as yet only in a minor way. Offerings from this district have not reached a point where they are affecting prices.

With the exception of a few areas which have always been more or less unsettled, the general retail picture was one of stability. This, too, was a reflection of the relatively tight tank car market.

Kerosine prices were receding under the pressure of continued offerings, and as the week ended prices still were pointing lower as nothing developed to stem the downward trend.

The influx of East Texas kerosine was one of the principal reasons for easing in this market. When East Texas kerosine was not being offered in quantity through Chicago sellers, the market for 41-43 w.w. grade rose to 4 cents. However, when the local Texas and coastal markets for this material disappeared, supplies again were offered in the northern area, which resulted in an almost immediate price reaction.

There were many traders who had believed that the kerosine market had reached its peak at around the 4-cent level and predicted that future price movements would be on the down side. Reactions in this market to date have borne out this prediction.

Bad weather has had a telling effect on movement of kerosine. Also, many sellers were pushing special products for use in tractors in place of kerosine, and this lessened the use of kerosine.

Eastern

Export Price Lower

NEW YORK, June 22

A REDUCTION in prices of gasoline for export shipment from the Gulf and some further unsettlement in retail markets at a few points in the eastern marketing territory, were the only actual price changes in the week ended June 22.

The reductions in export gasoline prices came as somewhat of a surprise to many, in view of the continued tightness in the Roumanian market and the lack of any large quantity of gasoline reported available a the Gulf.

Several reasons were advanced for the reductions, which were 0.125 cent a gallon in most cases. One supplier said that foreign buyers, while they still showed some interest in the Gulf market, were not as anxious to buy as formerly and that it appeared some companies were willing to shade their previous quotations in an effort to keep this business.

Others attributed the lower prices to the entry of several refiners who generally move their production through domestic channels. As domestic cargo buyers apparently were not willing to take on gasoline at present, and with most of the jobber buying along the eastern seaboard going through contract channels, these refiners were more willing to bid for export business than to push their gasoline into the open spot domestic market.

While divergent stories were heard as to whether or not any export business had been placed in the week ended June 22, reliable reports were that one and probably two cargoes of 60-62, 400 e.p. gasoline were sold at 5 cents, f.o.b. the Gulf. Other details of the transactions were lacking.

Two foreign buyers who inquiried for 64-66, 375 e.p. gasoline during the week were reported to have been quoted 5.25 to 5.375 cents, f.o.b. the Gulf. At last reports, neither of these deals had been closed.

Kerosine was more freely offered in the Gulf market and quotations were made at lower levels than those which had prevailed for several weeks. Some 41-43 w.w. kerosine was reported available, for either domestic or export shipment, at 3.875 cents.

Reductions in retail gasoline prices at Buffalo and Binghamton tended to unsettle that end of the market picture. Prices at Boston and Providence were below normal. However, reports were that prices at most points along the seaboard were steady and oil company executives generally said they were not looking for any serious break in retail prices.

Tank car gasoline markets remained stable. Practically no reports of price shading were heard and tank car prices of 6.25 cents or higher continued to prevail at all points along the seaboard for 65 octane and above gasoline.

Tank car kerosine prices generally were reported unchanged at points along the seaboard.

Lubricating oil prices, both for domestic and foreign shipment, were steady at unchanged levels.

California

Uncertainty Rules Market

LOS ANGELES, June 21

UNCERTAINTY continued to rule Pacific Coast wholesale and retail gasoline markets the past week, and no definite trend in prices was established. For several days both bulk and retail prices moved steadily up and then suddenly dropped to still lower levels.

Closer control of crude production, accompanied by the closing down of a number of independent refineries, appeared to be responsible for the upward movement. Relaxation of that control, coupled with failure of marketing companies to adhere to posted price schedules, caused prices to react again. Prospects of a stable market for refined products were clearly dependent on restriction of crude output to correspond with the effective demand. The closing down of a number of small refineries in the Los Angeles Basin area, through inability to obtain crude supplies, eased the situation somewhat but was offset by the release of low-cost gasoline that had been held in reserve by owners of chain service stations.

Tank wagon quotations on major-company third-grade gasoline, delivered in the Basin area, remained nominally at 10.5 cents a gallon, inclusive of 4 cents tax. Although this price appeared to be consistently supported by all major companies, it was not observed by their marketing affiliates, who were reported to be making deliveries at 9.5 cents a gallon, or less. Independent refiners generally posted 10 cents a gallon for their competitive brands, although many of them were selling unbranded gasoline at 9 cents. Taking into account the posted price

of crude and delivery costs, all sales below 10 cents a gallon were believed to entail a loss to the refiner.

Natural gasoline quotations ranged from 5.5 to 5.75 cents a gallon, delivered at refineries in the Basin area, but the supply was far in excess of the demand as, at the present price of gasoline, this product could not be profitably used for blending purposes.

Kerosine also was soft and quotations were fractionally lower, the average price being about 4.5 cents a gallon, f.o.b. refinery.

No change was reported in quotations on fuel oil. Major companies continued to pay 65 cents a barrel for any offerings of independent products, but few other buyers were ready to make commitments.

Hesitancy also has characterized the Pacific Coast seaboard market. Prospects of early revival of exports to the Orient were not considered good in view of the heavy import taxes now imposed by the Chinese government and the restrictive measures adopted by other countries. An increase in shipments to South America, however, was considered probable in the near future. Brazil, in particular, was believed to offer favorable opportunities.

Mid-Continent

Natural Prices Advance

TULSA, June 22

THE stalemate that has existed in the natural gasoline market the past month apparently has been broken and prices again were on the move.

Mid-Continent natural markets have been on dead center for the past four or five weeks. A major portion of production has been moving to the Gulf Coast in the form of stabilized natural. This has left little Grade 26-70 to be sold. But despite the fact that supplies of Grade 26-70 available in the open market have not been excessive, the market has lacked vigor. The result has been a steady market with virtually no price fluctuation.

It was not until the latter part of the past week that prices inclined higher. Advances were brought about by increased refinery demand and by a small amount of inter-manufacturer buying. The increase in volume of business was not large, but sufficient to send prices up 0.125 cent.

By June 22 virtually all quotations for Grade 26-70 had been advanced to 3.125 cents for both northern and southern shipment. There were occasional sales of this grade for local Texas shipment at 3.25 cents. This, however, had not become general.

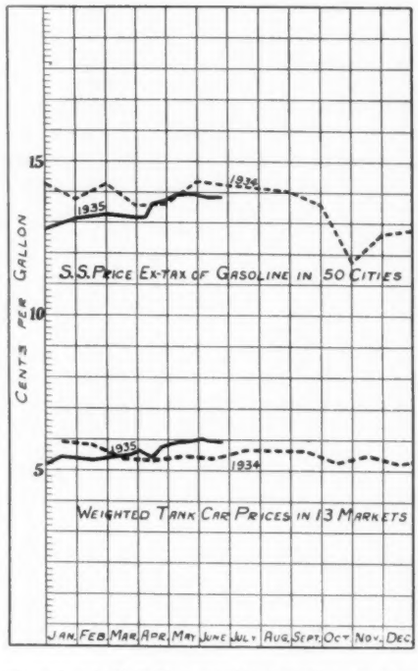
A check indicated there had been no appreciable letup in the volume of stabilized natural moving to the Gulf. Buyers continued to scour the market for 18 pound natural on favorable freight rates to Gulf ports.

The usual spring gasoline buying continued to be delayed by weather conditions and uncertainty over the federal gasoline tax. Ordinarly the motor fuel market has reached its high point by now. Unusually heavy rains this season, however, have held down gasoline consumption.

The uncertainty as to whether the federal gasoline tax would be continued has caused jobbers to delay the purchase of gasoline supplies for spring needs. And until such time as weather conditions clear and the fate of the federal tax is definitely decided, most observers were of the opinion jobbers would continue buying only on a hand-to-mouth basis. This in spite of the fact that Independence Day is not far off and stocks at most points are unusually low.

Should weather conditions clear, traders throughout the Mid-Continent were anticipating a flurry of buying after July 1 that will result in a shortage of supplies. In support of their theory they point to the stable market that has existed in the Mid-Continent over the past several months. Prices they say, have advanced to present levels over the past two or three months in spite of the light jobber demand. The natural conclusion would be a rapidly improving market, should jobber buying reach expected levels.

The incentive to increase crude runs in East Texas, some traders pointed out, has been removed. While kerosine and other burning oils were at their height, East Texas refiners were reported to be "making a little money" or about breaking even. But now that the market for these oils has slumped, the margin of profit has been reduced materially. Most refiners, however, have indicated they will curtail operations during the remainder of June and during July.



Trend of N.P.N. gasoline index during the past year comparing weighted average tank car prices in 13 markets with retail prices ex tax in 50 cities. See chart on page 100 for current index levels

The refined gasoline price structure in the Mid-Continent generally was unchanged. Low octane U. S. Motor and 400 e.p. gasoline were quoted to jobbers generally at 4.75 cents, Group 3. East Texas refiners were obtaining 4.625 cents, f.o.b. plant—4.75 cents on a Group 3 basis—for 400 e.p. gasoline. There was little gasoline of strictly U. S. Motor specifications available in that district.

Movement of Mid-Continent kerosine continued to lag as heavy rains blocked farmers from entering their fields. Products from East Texas were unsettling the market in other Mid-Continent districts. The competitive condition created by East Texas products was expected to be relieved as soon as weather conditions clear in the southeast. The normal market—excluding the Gulf—is in the southeast trade territory. As soon as that market comes back, East Texas offerings were expected to be withdrawn from the northern market.

Further price recessions were noted in both the 41-43 and 42-44 w.w. grades of kerosine in all Mid-Continent districts.

Mid-Continent bright stock was moving out readily at the recently advanced prices. Contract business took most of the production. Inventories of bright stock were low. In one or two instances, manufacturers purchased supplies in the open market to apply on contract commitments. Neutral oil also was in good position.

Inquiry for wax for shipment the remainder of this month and during July was brisker. Prices for future shipment, however, were on a parity with those for immediate shipment. Quotations were steady at 2 to 2.125 cents, f.o.b. plant. Most suppliers were sold up for the rest of June.

Wax

Demand Slow

NEW YORK, June 22.—The market for crude scale waxes continued slow, both for domestic and export shipment, in the week ended June 22. Offerings were plentiful at around 2 cents, but buyers apparently were not much interested at present.

Market for fully refined wax was unsettled but in general there were no changes reported in prices. Occasional small-lot sales were reported at prices which have prevailed for some time.

Pennsylvania

Trading Quiet

CLEVELAND, June 24.—Trading was only moderately active in the western Pennsylvania refinery market last week. According to some reports, in fact, the buying lull was rather pronounced. Prices for the most part, however, showed little change.

Refiners generally believed that as soon as uncertainty over the federal tax question is dispelled, activity in both gasoline and lubricating oils will pick up materially.

Trade reports indicated there was a healthier situation in lubricating oils than has existed for several months. Inventories of bright stock and 600 steam refined were said to be down substantially, and even stocks of neutral oil were not increasing. This was notable in view of the fact that it is the offseason for neutrals.

There was a slight increase in crude runs last week. Some refiners feared the increase in lubricating oil inventories which this might bring and consequently were not disposed to advance their quotations for bright stock. A further rise in the market had been anticipated quite generally.

Both bright stock and neutral oil were closely held. Several refiners were still in the market as buyers of bright stock and a few companies with low production of neutrals indicated they were endeavoring to obtain small quantities to put in storage against next winter's demand. While they agreed that, under normal circumstances, it was a little early to begin thinking about stocking up on neutrals, all indications pointed to a shortage of neutrals this year that would be equally as acute as the shortage of the past two years, they said.

Gasoline held the comparatively good position it attained earlier this month despite the pre-tax lull in buying. Even contract shipments have fallen off considerably but most refiners anticipated a resumption of normal activity around the end of June.

Kerosine was quiet. Some easing of prices was noted in the upper field. Lower field refiners, however, continued to dispose of their kerosine-distillate to the crackers, and thus the offerings of finished kerosine were held at a minimum in the lower field.

Fuel oil was quiet. Offerings throughout the field were in small volume, however, and no price shading to stimulate activity was encountered.

The long-awaited revival of buying interest in wax was believed near by several refiners. Spot sales continued light but buyers were showing more interest in futures. The 124-126 white crude scale held at 2.15 cents per pound.

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REFINERY TANK CAR MARKETS

Prices in cents per gallon, tank car lots, except where otherwise noted. Prices are those to domestic jobbers who resell to consumers. They do not represent inter-refinery sales, or sales for export. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Gasoline *and* Naphtha

	June 24	June 17	June 10
Oklahoma			
48-54, 450 e.p. naphtha....	4.75	4.75	4.75
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
63-70 octane (regular)..	5.625– 5.75	5.625– 5.75	5.625– 5.75
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
64-66, 375 e.p. gasoline....	4.875– 5.00	4.875– 5.00	4.875– 5.00
68-70, 350-360 e.p. gasoline	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
52-54 naphtha.....	5.875– 6.00	5.875– 6.00	5.875– 6.00
Motor gasoline:			
U. S. Motor (58-62°)....	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Minimum 60 octane....	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Minimum 65 octane....	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375
Minimum 70 octane....	.....	.....	.....
64-66, 390 e.p. gasoline....	6.375– 6.50	6.375– 6.50	6.375– 6.50
68-70, 350-360 e.p. gasoline	6.875– 7.00	6.875– 7.00	6.875– 7.00
Other districts:			
52-54 naphtha.....	5.875– 6.00	5.875– 6.00	5.875– 6.00
54-56 naphtha.....	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Motor gasoline:			
U. S. Motor (58-62°)....	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Minimum 60 octane....	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Minimum 65 octane....	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375
Minimum 70 octane....	.....	.....	.....
64-66, 390 e.p. gasoline....	6.375– 6.50	6.375– 6.50	6.375– 6.50
68-70, 350-360 e.p. gasoline	6.875– 7.00	6.875– 7.00	6.875– 7.00
California (3c tax to be added to prices if used in state)			
54-58 U. S. Motor, 437 e.p. for in-state shipment....	4.50 – 5.00	4.50 – 5.50	5.00 – 6.00
54-58 U. S. Motor, 437 e.p., for outside state shipment	4.50 – 5.00	4.50 – 5.50	5.00 – 6.00
58-61, 375-400 e.p. gasoline, 65 octane and above....	6.00 – 7.00	6.00 – 7.00	6.50 – 7.50
†***North Texas*** (F.o.b. Wichita Falls district for shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.75	4.75	4.75
63-70 octane (regular)..	5.625	5.625	5.625
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
64-66, 375 e.p. gasoline....	4.875– 5.00	4.875– 5.00	4.875– 5.00
68-70, 350-360 e.p. gasoline	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Kansas (F. o. b. refinery, Kansas destination)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
63-70 octane (regular)..	5.875– 6.00	5.875– 6.00	5.875– 6.00
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
†***West Texas and New Mexico*** (F. o. b. W. Texas and N. Mex. refinery for unrestricted shipment)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
63-70 octane (regular)..	5.625– 5.75	5.625– 5.75	5.625– 5.75
71 and above.....	.....	.....	.....
†***East Texas*** (F. o. b. East Texas refinery for unrestricted shipment)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.625– 4.75	4.625– 4.75	4.625– 4.75
63-70 octane (regular)..	.....	.....	.....
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	4.625– 4.75	4.625– 4.75	4.625– 4.75
North Louisiana (For Louisiana and Arkansas destination)			
U. S. Motor gasoline:			
62 octane and below....	5.50	5.50	5.50
63-70 octane number....	6.25	6.25	6.25
71 octane and above....	.....	....	....
Arkansas (For Arkansas and Louisiana destination)			
U. S. Motor gasoline:			
62 octane and below....	5.50	5.50	5.50
63-70 octane number....	6.25	6.25	6.25
71 octane and above....	.....	....	....

*Nominal. †Refiners generally receive from 0.25c to 0.5c per gallon more for gasoline and kerosine for local or differential territory shipment.

	June 24	June 17	June 10
Ohio (Quotations of S. O. Ohio. Delivered any point in Ohio).			
U. S. Motor gasoline.....	8.375	8.375	8.375
Above 65 octane number..	8.625	8.625	8.625

Natural Gasoline

(Prices shown f.o.b. Group 3 and Breckenridge represent majority of sales made on dates shown to blenders on the freight basis shown below, although shipments may originate in other manufacturing districts, such as East Texas, Panhandle, Southwest Texas or Kansas).

F.o.b. Group 3			
Grade 26-70.....	3.125	3.00	3.00
F.o.b. Breckenridge			
Grade 26-70.....	3.125	3.00	3.00
California (F. o. b. plants in Los Angeles basin)			
75-85, 375-390 e.p. for blending.....	5.50 – 5.75	5.00 – 5.75	5.25 – 6.50

Kerosine

Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
45 w.w. kerosine.....	4.625– 4.75	4.75 – 4.875	4.75 – 4.875
46 w.w. kerosine.....	4.75 – 4.875	4.875– 5.00	4.875– 5.00
47 w.w. kerosine.....	4.875– 5.00	5.00 – 5.125	5.00 – 5.125
Other districts:			
45 w.w. kerosine.....	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
46 w.w. kerosine.....	4.875– 5.00	4.875– 5.00	4.875– 5.00
47 w.w. kerosine.....	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Ohio (Quotations of S. O. Ohio. Delivered any point in Ohio).			
Kerosine.....	6.00	6.00	6.00
Oklahoma			
41-43 w.w. kerosine.....	3.75 – 3.875	3.875– 4.00	4.00 – 4.125
42-44 w.w. kerosine.....	3.875– 4.00	4.00 – 4.125	4.125– 4.25
Kansas (F. o. b. refinery Kansas destination)			
41-43 w.w. kerosine.....	4.00 – 4.125	4.25 – 4.375	4.25 – 4.375
42-44 w.w. kerosine.....	4.25	4.375– 4.50	4.50 – 4.625
†***North Texas*** (F.o.b. Wichita Falls district for shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).			
41-43 w.w. kerosine.....	3.75	3.875	4.00
†***East Texas*** (F.o.b. East Texas refinery for unrestricted shipment)			
41-43 w.w. kerosine.....	3.50 – 3.625	3.625– 3.75	3.75
North Louisiana (For Louisiana and Arkansas destination)			
41-43 w.w. kerosine.....	4.00	4.00	4.125
Arkansas (For Arkansas and Louisiana destination)			
41-43 w.w. kerosine.....	4.25	*4.25	4.375

*Correction: This price applied on June 17 also instead of price published in June 19 issue.

California (F.o.b. California refineries)			
38-40 w.w. kerosine.....	3.50 – 5.00	3.50 – 5.00	4.25 – 6.50

Gas *and* Fuel Oils

Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
36-40 fuel oil.....	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375
‡*Other districts*:			
36-40 fuel oil.....	4.125– 4.25	4.125– 4.25	4.125– 4.25

‡Not including Pittsburgh.

Oklahoma (F.o.b. Oklahoma refineries)			
Fuel oils:			
No. 1 white (38-40 grav.)	3.25 – 3.375	3.375– 3.50	3.50 – 3.625
No. 1 straw (38-40 grav.)	3.125– 3.25	3.25 – 3.375	3.375– 3.50
No. 2 straw (32-36 grav.)	3.00 – 3.125	3.00 – 3.125	3.125
No. 2 dark (32-36 grav.).	2.875– 3.00	3.00	3.00 – 3.125
U. G. I. gas oil.....	2.625	2.625	2.625
Fuel oils: (Prices per barrel of 42 U. S. gallons)			
28-30, zero.....	$1.15 –$1.20	$1.15 –$1.20	$1.15 –$1.20
28-30.....	$1.00 –$1.05	$1.00 –$1.05	$1.00 –$1.05
24-26.....	$0.775–$0.825	$0.775–$0.825	$0.775–$0.825
18-22.....	$0.75 –$0.775	$0.75 –$0.775	$0.75 –$0.775
14-16.....	$0.675–$0.70	$0.675–$0.70	$0.675–$0.70

(Continued on next page)

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(Continued from preceding page)

	June 24	June 17	June 10
Kansas (F.o.b. refinery, Kansas destination)			
No. 1 straw (38-40 grav.)..	3.375– 3.50	3.375– 3.625	3.375– 3.625
18-22 fuel oil (per bbl.)....	$0.85 –$0.875	$0.85 –$0.90	$0.85 –$0.90
10-14 fuel oil (per bbl.)....	$0.65 –$0.70	$0.725	$0.725
North Texas (F.o.b. Wichita Falls district for shipment to Texas and New Mexico; Group 3 prices quoted on northern shipments).			
No. 1 straw (38-40 grav.)	3.125– 3.25	3.25	3.375
No. 1 white (38-40 grav.)	3.25	3.25 – 3.375	3.375– 3.50
No. 2 (32-36 grav.).....	3.00	3.00	3.00
U.G.I. gas oil.....	2.625	2.625	2.625
24-26 fuel oil (per bbl.)....	$0.75	$0.80	$0.80
18-22 fuel oil (per bbl.)....	$0.675–$0.70	$0.675–$0.70	$0.675–$0.70
West Texas (F.o.b. West Texas refineries for unrestricted shipment).			
No. 2 (32-36 grav.).....	*2.75 – 2.875	*2.75 – 2.875	*2.75
18-22 fuel oil (per bbl.)....	$0.65	$0.65 –$0.675	$0.65 –$0.675
East Texas (F.o.b. East Texas refineries for unrestricted shipment).			
No. 1 white (38-40 grav.)..	*3.00 – 3.125	*3.00 – 3.125	*3.125– 3.25
No. 2 (32-36 grav.).....	*2.625– 2.75	*2.625– 2.75	*2.625– 2.75
U.G.I. gas oil.....	2.375	2.375– 2.50	2.50
24-26 fuel oil.....	$0.625–$0.65	$0.625–$0.65	$0.625–$0.65
20-24 fuel oil.....	$0.60 –$0.625	$0.60 –$0.625	$0.60 –$0.625
North Louisiana (For Louisiana and Arkansas destination).			
No. 2 (32-36 grav.).....	3.125– 3.25	3.125– 3.25	3.125– 3.25
U.G.I. gas oil.....	2.875– 3.00	2.875– 3.00	2.875– 3.00
20-24 fuel oil.....	$1.00 –$1.025	$1.00 –$1.025	$1.00 –$1.025
16-20 fuel oil.....	$0.90 –$0.925	$0.90 –$0.925	$0.90 –$0.925
10-14 fuel oil.....	$0.75 –$0.80	$0.75 –$0.80	$0.75 –$0.80
Arkansas (For Arkansas and Louisiana destination)			
No. 2 (32-36 grav.).....	3.50	3.50	3.50
28-30 gas oil, zero.....	3.25	3.25	3.25
20-24 fuel oil (per bbl.)....	$0.825–$0.875	$0.825–$0.875	$0.825–$0.875
16-20 fuel oil.....	$0.725–$0.775	$0.725–$0.775	$0.725–$0.775
10-14 fuel oil.....	$0.60 –$0.65	$0.60 –$0.65	$0.60 –$0.65
California			
San Joaquin Valley, per bbl.:			
Grade C fuel oil.....	$0.65 –$0.95	$0.60 –$0.70	$0.65 –$0.75
Diesel fuel oil.....	$1.10 –$1.45	$1.05 –$1.45	$1.05 –$1.45
Stove distillate.....	$1.25 –$1.85	$1.25 –$1.85	$1.25 –$1.85
Los Angeles, per bbl.:			
Grade C fuel oil.....	$0.65 –$0.95	$0.65 –$0.95	$0.65 –$0.95
Diesel fuel.....	$1.10 –$1.45	$1.10 –$1.45	$1.05 –$1.45
Stove distillate.....	$1.25 –$1.85	$1.25 –$1.85	$1.25 –$1.85
San Francisco, per bbl.:			
Grade C fuel oil.....	$1.00	$1.00	$1.00
Diesel fuel.....	$1.68	$1.68	$1.68
Stove distillate.....	$2.10	$2.10	$2.10

Neutral Oils

Western Penna. (Quotations and/or sales prices to car unloaders)

Viscous Neutrals (Viscosity at 70° F.)

200 Vis. (180 at 100°) No. 3 color, 420-425 flash:			
0 pour test.....	25.50 –26.00	25.50 –26.00	25.50 –26.00
10 pour test.....	24.50 –25.00	24.50 –25.00	24.50 –25.00
15 pour test.....	24.00 –24.50	24.00 –24.50	24.00 –24.50
25 pour test.....	23.00 –23.50	23.00 –23.50	23.00 –23.50
180 Vis. No. 3 color, 410-415 flash:			
25 pour test.....	21.00 –21.50	21.00 –21.50	21.00 –21.50
150 Vis. No. 3 color, 400-405 flash:			
0 pour test.....	20.50 –21.00	20.50 –21.00	20.50 –21.00
10 pour test.....	19.50 –20.00	19.50 –20.00	19.50 –20.00
15 pour test.....	19.00 –19.50	19.00 –19.50	19.00 –19.50
25 pour test.....	18.00 –18.50	18.00 –18.50	18.00 –18.50

South Texas (F.o.b. South Texas refineries, for domestic shipment)

Pale Oils:			
Vis. Color	*(Viscosity at 100° F.; pour test 0)*		
100 No. 1½-2½.....	5.00	5.00	5.00
200 No. 2-3.....	7.00	7.00	7.00
300 No. 2-3.....	7.50	7.50	7.50
600 No. 2½-3½.....	8.50	8.50	8.50
750 No. 3-4.....	9.00	9.00	9.00
1200 No. 3-4.....	9.50	9.50	9.50
2000 No. 3-4.....	9.75 –10.00	9.75 –10.00	9.75 –10.00
Red Oils:			
200 No. 5-6.....	7.00	7.00	7.00
300 No. 5-6.....	7.50	7.50	7.50
500 No. 5-6.....	8.50	8.50	8.50
750 No. 5-6.....	9.00	9.00	9.00
1200 No. 5-6.....	9.50	9.50	9.50
2000 No. 5-6.....	9.75 –10.00	9.75 –10.00	9.75 –10.00

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

Mid-Continent (Viscosity at 100° F.; F. o. b. Tulsa basis. Prices represent quotations and sales).

0 to 10 Pour Point:			
Vis. Color			
60-85.....	5.25	5.25	5.25
86-110.....	5.75	5.75	5.75
150—No. 3.....	10.00	10.00	10.00

*Nominal.

Neutral Oils (cont'd.)

	June 24	June 17	June 10
150—No. 4.....	9.50	9.50	9.50
180—No. 3.....	11.25	11.25	11.25
180—No. 4.....	10.75	10.75	10.75
180—No. 5.....	10.25	10.25	10.25
200—No. 3.....	11.75	11.75	11.75
200—No. 4.....	11.25	11.25	11.25
200—No. 5.....	10.75	10.75	10.75
220—No. 3.....	12.75	12.75	12.75
220—No. 4.....	12.25	12.25	12.25
220—No. 5.....	11.75	11.75	11.75
240—No. 3.....	13.75	13.75	13.75
240—No. 4.....	13.25	13.25	13.25
240—No. 5.....	12.75	12.75	12.75
280—No. 3.....	14.75	14.75	14.75
280—No. 4.....	14.00	14.00	14.00
280—No. 5.....	13.50	13.50	13.50
300—No. 3.....	15.25	15.25	15.25
300—No. 5-6.....	13.25	13.25	13.25
15 to 30 Pour Point:			
160-85.....	4.75	4.75	4.75
186-110.....	5.25	5.25	5.25
150—No. 3.....	9.00	9.00	9.00
150—No. 4.....	8.50	8.50	8.50
180—No. 3.....	10.25	10.25	10.25
180—No. 4.....	9.75	9.75	9.75
180—No. 5.....	9.25	9.25	9.25
200—No. 3.....	10.75	10.75	10.75
200—No. 4.....	10.25	10.25	10.25
200—No. 5.....	9.75	9.75	9.75
220—No. 3.....	11.75	11.75	11.75
220—No. 4.....	11.25	11.25	11.25
220—No. 5.....	10.75	10.75	10.75
240—No. 3.....	12.75	12.75	12.75
240—No. 4.....	12.25	12.25	12.25
240—No. 5.....	11.75	11.75	11.75
280—No. 3.....	13.75	13.75	13.75
280—No. 4.....	13.00	13.00	13.00
280—No. 5.....	12.50	12.50	12.50
300—No. 3.....	14.50	14.50	14.50
300—No. 5-6.....	13.00	13.00	13.00

Chicago (F.o.b. Chicago refineries) (Vis. at 100° F.)

Pale Oils, *15 to 30 pour point:			
Vis. Color			
60-85—No. 2.....	6.50	6.50	6.50
86-110—No. 2.....	7.00	7.00	7.00
140—No. 3.....	9.75	9.75	9.75
160—No. 3.....	10.50	10.50	10.50
180—No. 3.....	11.25	11.25	11.25
200—No. 3.....	11.75	11.75	11.75
250—No. 3.....	13.75	13.75	13.75
Red Oils, *15 to 30 Pour Point:			
180—No. 5.....	10.25	10.25	10.25
200—No. 5.....	10.75	10.75	10.75
220—No. 5.....	11.75	11.75	11.75
250—No. 5.....	12.75	12.75	12.75
280—No. 5.....	13.50	13.50	13.50
300—No. 5.....	14.00	14.00	14.00

*Oils with 0 to 10 pour point bring 1c higher than above prices. To obtain prices delivered in Chicago, add 0.25c per gal.

California (F.o.b. California refineries; Viscosity at 100° F.)

All neutral oils, 13.5c per gal. in tank car lots; and 15.5c in iron bbls., to efiners only, excluding federal tax.

Cylinder Stocks

Mid-Continent (F.o.b. Tulsa basis. Prices represent quotations and sales)

Bright Stocks:			
190-200 Vis. at 210° D....	18.00	18.00	17.50
150-160 Vis. at 210° D:			
0 to 10 pour test.....	15.00	15.00	14.50
10 to 25 pour test.....	14.50	14.50	14.00
25 to 40 pour test.....	14.00	14.00	13.50
150-160 Vis. at 210° E.....	14.00	14.00	13.50
120 Vis. at 210° D:			
0 to 10 pour test.....	14.50	14.50	14.00
10 to 25 pour test.....	14.00	14.00	13.50
25 to 40 pour test.....	13.50	13.50	13.00
600 Stm. Rfd. Dark Green	5.50 – 6.50	5.50 – 6.50	5.50 – 6.50
600 Stm. Rfd. Olive Green.	6.50 – 8.00	6.50 – 8.00	6.50 – 8.00
631 Steam Refined.....	10.00	10.00	10.00
Black oil.....	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375

Chicago (F.o.b. Chicago district refineries) (Viscosity at 210°)

Unfiltered Steam Refined:			
140.....	9.00	9.00	9.00
160.....	10.00	10.00	10.00
200.....	11.00	11.00	11.00
Bright stocks, 160 vis. at 210 No. 8 color:			
0 to 10 pour point.....	16.75	16.75	16.25
15 to 25 pour point.....	16.25	16.25	15.75
30 to 40 pour point.....	15.75	15.75	15.25
E filtered Cyl. Stock.....	14.00	14.00	13.50

(Continued on next page)

REFINERY TANK CAR MARKETS

CONTINUED FROM PRECEDING PAGE

Cylinder Stocks (cont'd)

Western Penna. (A.S.T.M. tests; quotations and/or sales prices to car unloaders)

	June 24	June 17	June 10
600 atm. rfd. filterable	9.50 –10.00	9.50 –10.00	9.50 –10.00
650 steam refined	11.00 –11.50	11.00 –11.50	11.00 –11.50
600 flash	12.00 –12.50	12.00 –12.50	12.00 –12.50
630 flash	17.00 –17.50	17.00 –17.50	17.00 –17.50
600 Warren E	13.00 –13.50	13.00 –13.50	13.00 –13.50
Bright stock, 150-160, vis. at 210°, 540-550 flash, No. 8 color:			
10 pour test	20.00 –20.50	20.00 –20.50	19.50 –20.00
15 pour test	19.00 –19.50	19.00 –19.50	18.50 –19.00
20 pour test	18.00 –18.50	18.00 –18.50	17.50 –18.00
25 pour test	17.00 –17.50	17.00 –17.50	16.50 –17.00

Petrolatums

Western Penna. (Per pound, in barrels, carload lots, f.o.b. Penna refinery. In tank cars, 0.5c per pound less. Quotations are from majority of petrolatum makers).

	June 24	June 17	June 10
Snow White	6.625	6.125	6.125
Lily White	5.625	5.125	5.125
Cream White	4.625	4.125	4.125
Light Amber	2.75	2.50	2.50
Amber	2.50	2.25	2.25
Red	2.00 – 2.125	1.75 – 1.875	1.75 – 1.875

Wax

Western Penna. (Per pound, f.o.b. New York)

	June 24	June 17	June 10
122-124 wh. crude scale, A.m.p.	2.10 – 2.15	2.10 – 2.15	2.10 – 2.15
124-126 wh. crude scale, A.m.p.	2.15 – 2.20	2.15 – 2.20	2.15 – 2.20

Oklahoma (Per pound in barrels; in a few instances, per pound in burlap bags; f.o.b. Oklahoma refineries)

	June 24	June 17	June 10
124-126 wh. crude scale, A.m.p.	2.00 – 2.125	2.00 – 2.125	2.00 – 2.125

Chicago (F.o.b. Chicago district refineries, in cents per pound, in bags, carload lots. Melting points A.S.T.M. method; add 3° F. to convert into A.m.p.)

Fully refined:

	June 24	June 17	June 10
122-124	4.40 – 4.50	4.40 – 4.50	4.40 – 4.50
125-127	4.65 – 4.75	4.65 – 4.75	4.65 – 4.75
127-129	4.80 – 4.90	4.80 – 4.90	4.80 – 4.90
130-132	5.40 – 5.50	5.40 – 5.50	5.40 – 5.50
132-134	5.65 – 5.75	5.65 – 5.75	5.65 – 5.75
135-137	6.40 – 6.50	6.40 – 6.50	6.40 – 6.50

*MID-WESTERN TANK CAR MARKETS

Following prices are in cents per gallon, except fuel oil in barrels of 42 U. S. gallons, in tank car lots, representing majority of sales of products made by Chicago sellers, from legally produced crude to jobbers on Group 3 freight basis, although shipments may originate in other South-western or Mid-western refining districts. Prices do not include state or federal taxes.

Gasoline

U. S. Motor gasoline:	June 24	June 17	June 10
62 octane and below (3rd grade)	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
63-70 octane (regular)	5.625– 5.75	5.625– 5.75	5.625– 5.75
71 octane and above	.....	.....	.....
60-62, 400 e.p.	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
64-66, 375 e.p.	4.875– 5.00	4.875– 5.00	4.875– 5.00
68-70, 350-360 e.p.	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125

Kerosine

	June 24	June 17	June 10
41-43 w.w.	3.625– 3.875	3.75 – 4.00	3.875– 4.00
42-44 w.w.	3.75 – 3.875	4.00 – 4.125	4.00 – 4.125

Fuel *and* Gas Oils

Domestic:	June 24	June 17	June 10
No. 1 prime white	3.125– 3.25	3.125– 3.375	3.125– 3.375
No. 1 straw	3.00 – 3.25	3.125– 3.25	3.125– 3.25
No. 2 dark	2.75 – 2.875	2.75 – 3.00	2.875– 3.125
No. 2 straw	2.875– 3.00	2.875– 3.00	3.00 – 3.25
No. 3	2.625– 2.875	2.625– 2.875	2.75 – 2.875
No. 4, (per bbl.)	$0.875–$0.90	$0.875–$0.90	$0.875–$0.90
No. 5, (per bbl.)	$0.65 –$0.675	$0.65 –$0.675	$0.65 –$0.675
Industrial:			
No. 4, (per bbl.)	$0.80 –$0.825	$0.80 –$0.825	$0.80 –$0.825
No. 5, (per bbl.)	$0.60 –$0.625	$0.625–$0.65	$0.625–$0.65
No. 6, (per bbl.)	$0.50 –$0.525	$0.50 –$0.525	$0.50 –$0.525
U.G.I. gas oil	2.375– 2.50	2.375– 2.50	2.375– 2.50

*Formerly Chicago Tank Car Markets.

Naphtha *and* Solvent

	June 24	June 17	June 10
Stoddard solvent	6.375	6.375	6.375
V. M. & P. naphtha	6.875	6.875	6.875
Cleaners' naphtha	6.875	6.875	6.875
Mineral spirits	5.875	5.875	5.875
Rubber solvent	6.875	6.875	6.875
Lacquer diluent	7.875	7.875	7.875

DAILY GASOLINE PRICES

Daily range of gasoline prices (cents per gallon) in tank cars, as reported in PLATT'S OILGRAM, (Week Ended June 22, 1935)

U.S.Motor, 62 octane & below (3rd grade):	June 17	June 18	June 19	June 20	June 21	June 22
East Texas	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75
*North Texas	4.75	4.75	4.75	4.75	4.75	4.75
West Texas	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
Oklahoma	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
Mid-Western (Group 3 basis)	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
U. S. Motor, 63-70 octane (regular):						
East Texas	.....	.....	.....	.....	.....	.....
*North Texas	5.625	5.625	5.625	5.625	5.625	5.625
West Texas	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75
Oklahoma	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75
Mid-Western (Group 3 basis)	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75
Motor Gasoline, 60-64 octane						
New York harbor	6.00	6.00	6.00	6.00	6.00	6.00
Philadelphia district	6.00	6.00	6.00	6.00	6.00	6.00
Baltimore district	6.00	6.00	6.00	6.00	6.00	6.00
Motor Gasoline, 65 octane & above						
New York harbor	6.25	6.25	6.25	6.25	6.25	6.25
Philadelphia district	6.25	6.25	6.25	6.25	6.25	6.25
Baltimore district	6.25	6.25	6.25	6.25	6.25	6.25
U. S. Motor Gasoline						
Bradford-Warren (Western Penna.)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Other districts (Western Penna.)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Motor Gasoline, Minimum 60 octane						
Bradford-Warren (Western Penna.)	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Other districts (Western Penna.)	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Motor Gasoline, Minimum 65 octane						
Bradford-Warren (Western Penna.)	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375
Other districts (Western Penna.)	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375	7.25 – 7.375

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipments.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 24, 1935, as posted by principal marketing companies at their headquarters offices, but subject to later corrections.

S. O. New Jersey

Essolene

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J.	7.5	10	4	17.5	9
Newark, N. J.	6.8	9.3	4	16.8	7.5
Annapolis, Md.	7.3	9.8	5	18.3	10
Baltimore, Md.	6.8	9.3	5	17.8	8.5
Cumberland, Md.	8.3	10.8	5	19.3	12.7
Washington, D. C.	6.8	9.3	3	15.8	9.5
Danville, Va.	8.1	10.6	6	20.1	12.9
Norfolk, Va.	6.6	9.1	6	18.6	11.3
Petersburg, Va.	7.3	9.8	6	19.3	11.4
Richmond, Va.	7.3	9.8	6	19.3	11.7
Roanoke, Va.	8.3	10.8	6	20.3	12.9
Charleston, W. Va.	7.5	10	5	18.5	12.6
Parkersburg, W. Va.	6.8	9.3	5	17.8	11.2
Wheeling, W. Va.	8	10.5	5	19	12.2
Charlotte, N. C.	8.9	10.5	7	20.5	13.5
Hickory, N. C.	9.2	11.7	7	22.2	13.7
Mt. Airy, N. C.	9.2	10.5	7	20	13.8
Raleigh, N. C.	8.7	11.2	7	21.7	13.3
Salisbury, N. C.	9	9	7	18	13.6
Charleston, S. C.	6.7	9.2	7	19.7	11.3
Columbia, S. C.	8.5	11	7	21.5	13.2
Spartanburg, S. C.	8.9	9.75	7	19	13.5

Price basis to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: Beginning Feb. 11, 1935, all new commercial consumers will be signed on following differentials over tank car price, on yearly purchases: up to 35,999 gals., 2.5c over t.c.; 36,000 to 119,999 gals., 2c; 120,000 to 239,999 gals., 1.5c; 240,000 to 479,999 gals., 1c; and over 480,000 gals., 0.5c.

Above prices apply only when deliveries are made in lots of 50 or 100 gals. at one time, depending on code region in which deliveries are effected.

If deliveries are made in less than these minimum quantities, s.s. price at time and place of delivery applies.

Non-contract customers will be billed at 2.5c over tank car price at time and place of delivery.

Kerosine Discount: 1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

Socony Mobilgas

	†Posted Dealer T.W.	Tax-es	†Total Posted Dealer T.W.	S.S	Kerosine T.W.
Metropolitan N. Y. City:					
Borough of Richmond (Staten Island)	9.55	*5	14.55	*18.3	7.25
Boroughs of Manhattan and Bronx	9.55	*5	14.55	*18.3	7.25
Kings and Queens	9.3	*5	14.3	*17.8	7.25
Albany, N. Y.	9.2	5	14.2	17.7	7.5
Binghamton, N. Y.	9.75	5	14.75	17.5	9.25
Buffalo, N. Y.	9.45	5	14.45	17.5	8
Jamestown, N. Y.	9.8	5	14.8	18.3	8
Plattsburg, N. Y.	10.2	5	15.2	18.7	8.5
Rochester, N. Y.	10	5	15	18.5	8.5
Syracuse, N. Y.	9.5	5	14.5	18	8.5
Danbury, Conn.	9.7	3	12.7	16.2	8
Hartford, Conn.	9.3	3	12.3	15.8	7.5
New Haven, Conn.	9.2	3	12.2	15.7	7.5
Bangor, Me.	10.1	5	15.1	19	8
Portland, Me.	9.5	5	14.5	18	7.5
Boston, Mass.	7	4	11	12.5	7
Concord, N. H.	10.2	5	15.2	18.7	8.25
Lancaster, N. H.	11.2	5	16.2	20	9.25
Manchester, N. H.	9.8	5	14.8	18.3	8.25
Providence, R. I.	8	3	11	13.5	7
Burlington, Vt.	11.2	5	16.2	19.7	8.5
Rutland, Vt.	11.1	5	16.1	19.6	9

*Plus 2% city sales tax computed at time of each sale.

†Prices are to "split" or "divided" dealers.

Discounts to dealers: thru territory, except New York City, off normal s.s. price, 4c to undivided dealers, and 3.5c to "split" dealers.

Effective May 1, 1935: In New York City, in Boroughs of Kings and Queens, to undivided dealers, 4c; in other boroughs, 4.25c; to split dealers, 0.5c less than to undivided dealers.

To commercial consumers: Effective Feb. 4, 1935, covering yearly purchases, billed at posted tank car price, plus these differentials: 2.5c for delivery of 1,200 to 36,000 gals.; plus 2c, for 36,000 to 120,000 gals.; plus 1.5c for 120,000 to 240,000 gals.; plus 1c for 240,000 to 480,000 gals.; plus 0.5c for 480,000 gals. and over. Those buying less than 1,200 gals. yearly, get retail s.s. price.

Atlantic Refining

Atlantic White Flash Plus Gasoline

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.	11	4	15	17	9
Pittsburgh, Pa.	12	4	16	18	10
Allentown, Pa.	11.5	4	15.4	17.5	10
Erie, Pa.	11	4	15	17	9
Scranton, Pa.	12	4	16	18	10
Altoona, Pa.	12	4	16	18	10
Dover, Del.	11.5	4	15.5	17.5	10
Wilmington, Del.	11.5	4	15.5	16.5	9
Boston, Mass.	9	4	13	14.5	7
Springfield, Mass.	9.2	4	13.2	16.7	7.5
Worcester, Mass.	9.3	4	13.3	16.8	7.5
Fall River, Mass.	9.2	4	13.2	16.7	7.5
Providence, R. I.	9	3	12	15.5	7
Hartford, Conn.	9.3	3	12.3	15.8	7.5
New Haven, Conn.	9.2	3	12.2	15.7	7.5
Atlantic City, N. J.	10	4	14	17.5	9
Camden, N. J.	9.5	4	13.5	17	8.5
Trenton, N. J.	9.6	4	13.6	17.1	8
Annapolis, Md.	9.6	5	14.6	18.1	9.5
Baltimore, Md.	9.1	5	14.1	17.6	8.5
Hagerstown, Md.	10.1	5	15.1	18.6	10
Richmond, Va.	9.8	6	15.8	19.3	11.7
Wilmington, N. C.	9.3	7	16.3	19.8	11.4
Brunswick, Ga.	7	7	14	15	*14
Jacksonville, Fla.	10.5	8	18.5	20.5	11.5

Dealer discounts: on Atlantic White Flash Plus gasoline, thru territory, divided dealers, price equal to 3.5c off posted s.s. price; undivided dealers, price equal to 4c off posted s.s. price; authorized dealers contracts previous to Aug. 19, 1933, price equal to 3c less than posted s.s. price, plus 1c rental.

Discounts to commercial consumers: Consumer t.w. accounts billed at full t.w. price, with these discounts, effective Dec. 4, 1934, on yearly purchases: 1800 to 36,000 gals., 1.5c; 36,000 to 120,000 gals., 2c; 120,000 to 240,000 gals., 3c; 240,000 to 480,000 gals., 3.25c; 480,000 gals. and over, 3.5c. Those buying less than 100 gals. get retail s.s. price.

*Georgia kerosine has 1c state tax, not included in above prices.

S. O. Ohio

Sohio X-70 Gasoline

Ohio statewide	12	5	17	19	*12.5
Franklin county	10	5	15	14	....

Renown (Third Grade Gasoline)

Ohio statewide	11.5	5	16.5	17.5	....

Counties off statewide gasoline schedule:

Butler, Champaign, Clark, Darke, Greene, Hamilton, Miami, Montgomery, Preble and Summit

	12	5	17	19	....
Franklin county	8.5	5	13.5	12.5	....

Statewide Prices to Resellers & Agents

(On sliding scale basis, reflecting tank car price of 8.625 per gal. for 65-70 octane).

Including taxes	†Undivided Accounts	Divided Accounts	**Authorized Agents
Sohio X-70	15.5	16	16
Renown (3rd grade)	15	15.5	15.5

Note: On single deliveries of motor gasolines under 25 gallons, to t.w. consumers, s.s. price applies.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

*Kerosine prices include 1c state tax. Kerosine t.w. price in Hardin and Wyandot counties is 11.5c.

†Excluding authorized agents.

**Excluding 0.5c rental.

Discounts to contract tank wagon consumers only: on all motor gasolines, effective Dec. 1, 1934, off t.w. price, on deliveries per month: 1,000 to 9,999 gals., 1.5c per gal. 10,000 gals. and over, 2.5c. Under 1,000 gals., full t.w. price. Single deliveries of less than 25 gals., full s.s. price.

Discounts on kerosine: to dealers and commercial consumers, 3c per gal. off t.w. price, any quantity.

S. O. Kentucky

Crown Gasoline

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Lexington, Ky.	13.5	6	19.5	21.5	10
Louisville, Ky.	12.5	6	18.5	20.5	10
Paducah, Ky.	12.5	6	18.5	20.5	10
Covington, Ky.	12	6	18	20	11.5
Jackson, Miss.	12	7	19	21	*11
Vicksburg, Miss.	11.5	7	18.5	20	*12
Birmingham, Ala.	13	*8	21	23	12
Mobile, Ala.	12	*8	20	22	11
Montgomery, Ala.	13	*9	22	24	*13.5
Macon, Ga.	12.5	7	19.5	21	*13
Atlanta, Ga.	12	7	19	21	*12
Augusta, Ga.	12	7	19	20	*13
Savannah, Ga.	11.5	7	18.5	20.5	*14
Jacksonville, Fla.	10.5	8	18.5	20.5	11.5
Miami, Fla.	10.5	8	18.5	20.5	13.5
Tampa, Fla.	10.5	8	18.5	20.5	12.5
Pensacola, Fla.	11	*9	20	22	11.5

Kyso (Third Grade)

Lexington, Ky.	12.5	6	18.5	20	....
Louisville, Ky.	11.5	6	17.5	19	....
Paducah, Ky.	10.5	6	16.5	17.5	....
Covington, Ky.	11	6	17	18.5	....
Jackson, Miss.	11	7	18	19.5	....
Vicksburg, Miss.	9.5	7	16.5	17	....
Birmingham, Ala.	11.5	*8	19.5	21	....
Mobile, Ala.	10	*8	18	19	....
Montgomery, Ala.	11	*9	20	21	....
Atlanta, Ga.	8	7	15	16	....
Augusta, Ga.	9	7	16	16.5	....
Macon, Ga.	10.5	7	17.5	18	....
Pensacola, Fla.	9.5	*9	18.5	20	....

Dealer Discount: off posted s.s. price, on Crown and Crown Ethyl gasolines to "undivided" dealers 4c; on Kyso, 3c. To "divided" dealers: Crown and Ethyl, 3.5c, and Kyso, 2.5c, all effective on or about Jan. 1, 1934.

Discounts to tank wagon consumers: all single deliveries of 25 gals. or less, get posted s.s. price; all single deliveries of 25 gals. or more, to be billed at posted t.w. price, plus following discounts, off posted t.w. price: Ethyl and Crown gasoline, 25 to 2,999 gals. monthly, 1.5c; Kyso, 1c; 3,000 to 24,999 gals., Ethyl and Crown, 2c; Kyso, 1.5c; 25,000 gals. or more, Ethyl and Crown, 3c; and Kyso, 2.5c.

**Taxes*: in the tax column is included these city and county gasoline taxes at the following points; Birmingham, 1c city; Mobile, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Mississippi kerosine prices include 1c state tax; Montgomery kerosine price includes ½c city tax.

S. O. Indiana

Standard Red Crown Gasoline

Chicago, Ill.	11.5	4	15.5	17.5	9.8
Decatur, Ill.	11.5	4	15.5	17.5	9.8
Joliet, Ill.	11.5	4	15.5	17.5	9.8
Peoria, Ill.	11.5	4	15.5	17.5	9.8
Quincy, Ill.	11.3	4	15.3	17.3	9.6
Indianapolis, Ind.	12.4	*5	17.4	19.4	‡14.5
Evansville, Ind.	12.2	*5	17.2	19.2	‡14.3
South Bend, Ind.	12.6	*5	17.6	19.6	‡12
Detroit, Mich.	12.7	4	16.7	18.7	9.3
Grand Rapids, Mich.	12.6	4	16.6	18.6	10.5
Saginaw, Mich.	12.8	4	16.8	18.8	9.3
Green Bay, Wisc.	12.2	5	17.2	19.2	10.5
Milwaukee, Wisc.	11.8	5	16.8	18.8	10.1
La Crosse, Wisc.	11.9	5	16.9	18.9	10.2
Minneapolis, Minn.	11.9	4	15.9	17.9	10.2
Duluth, Minn.	12.3	4	16.3	18.3	10.6
Mankato, Minn.	11.9	4	15.9	17.9	10.2
Des Moines, Iowa.	11.3	4	15.3	17.3	9.6
Sioux City, Iowa.	11.5	4	15.5	17.5	9.8
Davenport, Iowa.	11.5	4	15.5	17.5	9.8
Mason City, Iowa.	11.7	4	15.7	17.7	10
St. Louis, Mo.	11.2	†4	15.2	17.2	9.5
Kansas City, Mo.	10.9	†4	14.9	16.9	9.2
St. Joseph, Mo.	10.9	†4	14.9	16.9	9.2
Fargo, N. D.	12.9	4	16.9	18.9	11.2
Minot, N. Dak.	14.1	4	18.1	20.1	12.4
Huron, S. Dak.	12.4	*5	17.4	19.4	10.7
Wichita, Kans.	10.4	4	14.4	14.2	6.3

Note: Kerosine s.s. prices are generally 3c above normal t.w. price.

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls.; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal. for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 24, 1935, as posted by principal marketing companies at their headquarters offices, but subject to later corrections.

S. O. INDIANA (Cont'd)

Stanolind Gasoline (Third Grade)

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Decatur, Ill.	10.5	4	14.5	16	....
Peoria, Ill.	10.5	4	14.5	14.3	....
Evansville, Ind.	11.2	*5	16.2	17.7	....
Indianapolis, Ind.	11.4	*5	16.4	18.1	....
Des Moines, Iowa	8.6	4	12.6	16.3	....
Detroit, Mich.	11.7	4	15.7	17.2	....
Grand Rapids, Mich.	11.2	4	15.2	17.2	....
Duluth, Minn.	11.3	4	15.3	17	....
Huron, S. D.	11.4	*5	16.4	18.2	....
Wichita, Kans.	7.7	4	11.7	12.3	....

†St. Louis, Kansas City and St. Joseph prices include 1c city tax. ‡Includes 4c state tax.

*South Dakota gasoline and kerosine prices include 0.1c for sales tax. Indiana t.w. and s.s. gasoline prices include 0.2c for chain store tax.

Discounts: Effective Dec. 1, 1934, thru territory except Michigan, effective Apr. 1, 1935, maximum discounts to controlled and uncontrolled dealers and undivided gasoline accounts, off s.s. price at normal points, Ethyl and Red Crown gasoline, 3.5c; Stanolind 2.5c; at points where prices are more than 1c subnormal, 0.5c less. Divided gasoline accounts get 0.5c less per gallon. In case of lease and agency and AAA accounts, the above discounts include the 0.5c per gal. rental allowance.

Discounts to commercial consumers: effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. price; all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals. or more, 1.5c off t.w. on Ethyl and Red Crown, and 0.5c on Stanolind. Purchases of less than 25 gals. get regular s.s. price.

S. O. Nebraska

Standard Red Crown Gasoline

Omaha, Neb.	11.9	6	17.9	19.9	10.1
McCook, Neb.	12.6	6	18.6	20.6	10.8
Norfolk, Neb.	12.3	6	18.3	20.3	10.5
North Platte, Neb.	12.7	6	18.7	20.7	10.9
Scottsbluff, Neb.	13.4	6	19.4	21.4	11.6

Reliance Gasoline (Third Grade)

Omaha, Neb.	9.9	6	15.9	15.9	....
McCook, Neb.	11.6	6	17.6	19.1	....
Nortolk, Neb.	11.3	6	17.3	19.3	....
North Platte, Neb.	11.7	6	17.7	19.7	....
Scottsbluff, Neb.	12.4	6	18.4	20.4	....

Discount to dealers: where service station gasoline prices are normal, resellers' allowance off service station prices are (*Maximum* over-all, including rent) as follows: Reliance, 2½c; Standard Red Crown, and Red Crown Ethyl, 3½c. Where service station gasoline prices are below normal, resellers' allowances are reduced one-half of the amount below normal, down to the following (*Minimum* over-all including rent): Reliance, 2c, Standard Red Crown and Red Crown Ethyl 3c.

Discounts to consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

Essolene

	Posted Tank Car	Dealer T.W.	Tax- es	Posted S.S.	Kerosine T.W.
Little Rock, Ark.	7	9.5	7.5	20.5	11.5
Alexandria, La.	7	9.5	*8	21	*10.5
Baton Rouge, La.	7	9.5	*7	20	*12.5
New Orleans, La.	7	9.5	*8	21	*13.5
Lake Charles, La.	7.5	10	*8	21.5	*12.5
Shreveport, La.	6.5	9	*7	19.5	*9
Lafayette, La.	7.5	10	*8	21.5	*12.5
Bristol, Tenn.	8.6	9.85	8	20.6	14.5
Chattanooga, Tenn.	9	10.25	8	20.5	11.5
Knoxville, Tenn.	9.5	11	8	21.5	14
Memphis, Tenn.	7.5	10	8	21.5	11
Nashville, Tenn.	8.5	10	8	20.5	13.5

*Baton Rouge and Shreveport gasoline tax includes 5c state tax, 1c federal tax, and 1c parish tax; Alexandria, Lake Charles, Lafayette and New Orleans, 2c parish tax. Louisiana kerosine prices include 1c state tax; New Orleans kerosine includes also 1c parish tax.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective Feb. 11, 1935, commercial consumers not under contract will be billed at 2.5c per gal. above posted bulk plant tank car price at time and place of delivery in lots of 50 gals. or more at one time. Contract customers will be billed at following differentials over tank car price, on yearly purchases: up to 35,999 gals., 2.5c over tank car price; 36,000 to 119,999 gals., 2c over; 120,000 to 239,999 gals. 1.5c; 240,000 to 479,999 gals., 1c; 480,000 gals. and over, 0.5c.

On single deliveries to all classes of commercial consumers, of less than 50 gals., s.s. price at time and place of delivery applies.

Magnolia Petroleum

Mobilgas

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Muskogee, Okla.	11	5	16	18	8
Oklahoma City	11	5	16	18	8
Tulsa, Okla.	11	5	16	18	8
Fort Smith, Ark.	9.5	†5	14.5	18	8.5
Little Rock, Ark.	9.5	7.5	17	20.5	9.5
Texarkana, Ark.	10.5	*5	15.5	17.5	8
Dallas, Tex.	10	5	15	17	8
Ft. Worth, Tex.	10	5	15	17	8
Houston, Tex.	10	5	15	17	8
San Antonio, Tex.	10	5	15	17	8
El Paso, Tex.	12	5	17	19	10
Santa Fe, N. M.	13.5	**7	20.5	22.5	12
Roswell, N. M.	12.5	††6.5	19	21	11

Metro Gasoline (Third Grade)

Muskogee, Okla.	8	5	13	15	....
Oklahoma City	8	5	13	15	....
Tulsa, Okla.	8	5	13	15	....
Fort Smith, Ark.	9	5	14	16.5	....
Little Rock, Ark.	..	..	....	....	....
Texarkana, Ark.	7.5	5	12.5	14.5	....
Dallas, Tex.	7	5	12	14	....
Ft. Worth, Tex.	7	5	12	14	....
Houston, Tex.	8	5	13	15	....
San Antonio, Tex.	7	5	12	14	....
El Paso, Tex.	10	5	15	17	....
Santa Fe, N. M.	11.5	**7	18.5	20.5	....
Roswell, N. M.	10.5	††6.5	17	19	....

*In Texarkana, 4c Texas tax applies; outside Texarkana, 6.5c Arkansas tax applies.

†In Fort Smith, 4c Oklahoma tax applies outside Fort Smith, 6.5c Arkansas tax applies.

**Includes 1c city tax.

††Includes 0.5c city tax.

Note: *Price basis to dealers* off s.s. price in t.w., bulk or bbl. deliveries, on Mobilgas and Ethyl, normally: to 100% dealers, 4c; to divided dealers, 3.5c. On Metro gasoline in Texas, Oklahoma and New Mexico: to 100% dealers, 3c; to divided dealers. 2.5c. On Metro, in Arkansas and Louisiana: to 100% dealers 3c.

Price basis to consumers: All grades of gasoline invoiced at consumer's t.w. price, which normally is 2c less than s.s. price, less following contract quantity discounts at end of month, on monthly purchases: thru Texas, Oklahoma and New Mexico: 3,001 to 10,000 gals., Mobilgas and Ethyl, 1c, Metro, 0.5c; 10,001 gals. and over, Mobilgas and Ethyl, 2c, Metro, 1c; 25 to 3,000 gals., no discount. Thru Arkansas and Louisiana, on Mobilgas and Ethyl, following basis will apply, on an estimated monthly consumption, differentials figured over posted tank car delivered price: 50 to 3,000 gals., 2.5c over; 3,001 to 10,000 gals., 2c; 10,001 to 20,000 gals., 1.5c; 20,001 to 40,000 gals., 1c; 40,001 gals. or more, 0.5c per gal. over. Deliveries are 25 gals. or more in Texas, Oklahoma, and N. Mex., and 50 gals. or more in Ark. and La.

Continental Oil

Conoco Bronze Gasoline

Denver, Colo.	13	5	18	20	13
Pueblo, Colo.	12	5	17	19	13
Grand Junc., Colo.	15.5	5	20.5	22.5	15
Casper, Wyo.	13.5	5	18.5	20.5	11.5
Cheyenne, Wyo.	13.5	5	18.5	20.5	13
Billings, Mont.	14.5	6	20.5	22.5	16.5
Butte, Mont.	15	6	21	23	17.5
Great Falls, Mont.	14.5	6	20.5	22.5	17.5
Helena, Mont.	15.5	6	21.5	23.5	17.5
Salt Lake City, Utah	16	5	21	23	16
Boise, Ida.	16.5	6	22.5	24.5	18
Twin Falls, Ida.	17	6	23	25	18
Albuquerque, N. M.	13.5	†6.5	20	22	13

Demand (Third Grade)

Denver, Colo.	11	5	16	18	....
Cheyenne, Wyo.	11.5	5	16.5	18.5	....
Helena, Mont.	13.5	6	19.5	21.5	....
Salt Lake City, Utah	14	5	19	21	....
Boise, Ida.	14.5	6	20.5	22.5	....
Albuquerque, N. M.	11.5	†6.5	18	20	....

†Includes city tax of 0.5c.

Discounts: effective March 1, 1934, on gasolines, thru territory, off s.s. price: to "undivided" dealers: Ethyl and Conoco Bronze, 4c; Demand, 3c; to "divided" dealers: Ethyl and Conoco Bronze, 3.5c; Demand, 2.5c.

S. O. California

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Standard Gasoline					
San Francisco, Cal.	12.5	4	16.5	18.5	11.5
Los Angeles, Cal.	8.5	4	12.5	14.5	10.5
Fresno, Cal.	13	4	17	19	12
Phoenix, Ariz.	14	6	20	22	†16
Reno, Nev.	13	5	18	20	13
Portland, Ore.	13	6	19	21	13.5
Seattle, Wash.	13	6	19	21	13.5
Spokane, Wash.	16	6	22	24	16.5
Tacoma, Wash.	13	6	19	21	13.5
Flight Gasoline (Third Grade)					
San Francisco, Cal.	10.5	4	14.5	16.5	....
Los Angeles, Cal.	7.5	4	11.5	13.5	....
Fresno, Cal.	11	4	15	17	....
Reno, Nev.	11	5	16	18	....
Phoenix, Ariz.	12	6	18	20	....
Portland, Ore.	11	6	17	19	....
Seattle, Wash.	11	6	17	19	....
Spokane, Wash.	14	6	20	22	....
Tacoma, Wash.	11	6	17	19	....

†Includes 5c state tax.

Discounts: on gasoline: on Stanavo Aviation, Standard Ethyl, and Standard gasolines, to 100% dealers, 2c below t.w. price; on Flight, 1c per gal. below t.w. To "split" dealers, all brands gasoline 1c below t.w.

On kerosine: tank car delivery, 3.5c off t.w. price to all classes of trade; transport truck and trailer deliveries, 3.5c below t.w. to resellers; plant deliveries to jobbers, 3c below t.w.

Canada

Prices of Imperial Oil Ltd.

Per Imperial Gallon, which is 1.2 U. S. Gallons

Imperial Three Star Gasoline

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Hamilton, Ont.	16	6	22	25	17.5
Toronto, Ont.	16	6	22	25	17.5
Brandon, Man.	23.3	7	30.3	33.3	21.8
Winnipeg, Man.	21.7	7	28.7	31.7	20.2
Regina, Sask.	23	7	30	33	21.5
Saskatoon, Sask.	25.8	7	32.8	35.8	24.3
Edmonton, Alta.	25.2	7	32.2	35.2	23.7
Calgary, Alta.	22.5	7	29.5	32.5	21
Vancouver, B. C.	20	7	27	30	24
Montreal, Que.	18	6	24	27	17
St. John, N. B.	18	8	26	30	19.5
Halifax, N. S.	18	8	26	30	19.5

Discount to dealers and A.R.D. Accounts:

On gasoline, effective May 14, 1934: in Maritime Provinces, all dealers get 4c off s.s. price; in all other provinces, open dealers get 3c off s.s. price and 1c additional to 100% accounts.

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil and Magnolia Pet. Co.) Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes.

Effective June 24, 1935

	Tank Car	T.W.
S. O. New Jersey		
Bayonne, N. J.	9.5	12
Baltimore, Md.	9.5	12
Washington, D. C.	....	12.6
Richmond, Va.	....	13.5
Greensboro, N. C.	....	14.9
Raleigh, N. C.	....	14.6
Charleston, W. Va.	....	14.2
Colonial Beacon Oil Co.		
Brooklyn, N. Y.	....	12.8
Buffalo, N. Y.	....	13.7
Boston, Mass.	....	13.5
S. O. Pennsylvania		T.W.
Philadelphia, Pa.	....	14.1
Pittsburgh, Pa.	....	14.9

(Continued on next page)

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 24, 1935, as posted by principal marketing companies at their headquarters offices, but subject to later corrections.

S. O. Louisiana

	Tank Car
F.O.B. Tulsa	8.5

All above prices do not include state or federal taxes.

Note: S.s. prices in above four territories are generally 6c over t.w. prices. Following discounts apply for t.w. deliveries, on monthly purchases, off t.w. price: 3,000 to 10,000 gals., 0.5c; 10,000 to 20,000 gals., 1c; 20,000 to 40,000 gals., 1.5c; and over 40,000 gals., 2c. Consumer t.w. price is generally tank car price, plus freight, plus 2.5c per gal.

S. O. Ohio

	T.W.	Tax	Total T.W.
Thru Ohio: (To Commercial Consumers) Stanavo Ethyl Aviation (73 Octane):	15.5	5	20.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below commercial consumer posted t.w. price.

S. O. Indiana

Chicago, Ill.	13.6	4	17.6
Indianapolis, Ind.	14.5	5	19.5
Detroit, Mich.	15.1	4	19.1
Milwaukee, Wisc.	13.9	5	18.9
Minneapolis, Minn.	14	4	18
St. Louis, Mo.	13.3	3	16.3
Kansas City, Mo.	13	*4	17
Fargo, N. D.	15	4	19
Huron, S. D.	**14.5	5	19.5
Wichita, Kans.	12.5	4	16.5

*Includes 1c city tax.
**Includes 0.1c to cover sales tax.

Magnolia Petroleum

Dallas, Tex.	13	5	18

Humble Oil & Refining Co.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.2

Continental Oil Co.

	T.W.	Tax	Total T.W.
Denver, Colo.	16	5	21
Cheyenne, Wyo.	16.5	5	21.5
Helena, Mont.	20	6	25.5
Salt Lake City, Utah	19	5	24
Albuquerque, N. M.	16.5	*6.5	23

*Includes city tax of 0.5c.

S. O. California

Phoenix, Ariz.	15.5	6	21.5
Los Angeles, Cal.	13	4	17
San Francisco, Cal.	13.5	4	17.5
Reno, Nev.	15	5	20
Portland, Ore.	14	6	20
Seattle, Wash.	14	6	20
Spokane, Wash.	17	6	23

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha

In Effect June 24, 1935

In Tank Wagon or Steel Barrels; In Cents per Gallon)

	Mineral Spirits	V.M.&P. Naphtha	Cleaner Naphtha	*Solvent
Altoona, Pa.	....	....	....	17
Baltimore (net)	11	....	....	11
Boston (net)	11	13	13	11
Bridgeport	....	....	....	13.5
Buffalo (net)	....	....	....	14
Chicago	13.7	15	15	15
Detroit	†17.4	†17.6	†18.6	17.5
Kansas City	14	15.6	16.4	19.3
Lancaster, Pa.	....	....	....	17
Milwaukee	19.5	†21.1	21.9	18.5
Minneapolis	†19.8	†21.3	†22.1	†15.9
Newark (net)	13	....	....	13
New York (net)	11	13	13	11
Philadelphia (net)	11.5	13	13	11.5
Providence (net)	11	11	....	11
Rochester (net)	14	....	....	14
St. Louis	14.7	16.3	17.1	13
Syracuse	....	....	....	16

Petroleum Spirits (Solvent)

In Tank Cars (F.o.b. refinery or seaboard terminal	
New York Harbor	9
Philadelphia district	9
Providence	9

Note: 2c off above t.w. prices to large buyers in some instances.

*In the East, prices apply on product generally known as Mineral Spirits; in the middlewest, prices apply on Stanosol (S. O. Indiana grade of Stoddard Solvent).

†At the following points, these taxes and/or discounts apply on the products specified: Detroit, first three products include 3c state tax, prices applying on 150 gals. or more, with prices 1c higher for less than 150 gals.; Milwaukee, V.M.&P. price includes 4c state tax; Minneapolis, first 3 products include 3c state tax; price for solvent for less than 100 gals. is 1c higher.

Latest Changes

From June 18 to June 24 inclusive. Dates and amounts of changes shown. See table for full current prices. Changes are on gasoline unless kerosine is indicated.

S. O. New Jersey—Essolene:

Mt. Airy, dealer t. w. cut 0.75c, s. s. cut 1.5c, June 18.

Salisbury, dealer t. w. cut 1.5c, s. s. cut 2c, June 18.

S. O. New York—Socony Mobilgas:

Buffalo, dealer t. w. cut 0.25c, s. s. cut 0.7c, June 21.

Binghamton, dealer t. w. cut 0.25c, s. s. cut 1c, June 21.

S. O. Nebraska—Reliance:

McCook, s. s. cut 0.5c, June 19.

S. O. Louisiana—Essolene:

Chattanooga, dealer t. w. cut 0.5c, s. s. cut 1c, June 18.

New Orleans, dealer t. w. up 2c, s. s. up 3.5c, June 20.

S. O. California—Standard and Flight:

Fresno, up 1c, June 21.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes. Changes are on gasoline unless kerosine is indicated.

S. O. New Jersey—Essolene:

Spartanburg, dealer t. w. cut 1.65c, s. s. cut 2.9c, June 15.

S. O. Nebraska—Reliance:

Omaha, cut 0.3c, June 15.

S. O. Louisiana—Essolene:

Chattanooga, dealer t. w. cut 0.75c, s. s. cut 1.5c, June 8.

Nashville, dealer t. w. cut 0.5c, s. s. cut 1c, June 11; dealer t. w. cut 0.5c, s. s. cut 1c, June 15.

Knoxville, dealer t. w. cut 0.5c, s. s. cut 1c, June 11; dealer t. w. cut 0.25c, s. s. cut 0.5c, June 13; dealer t. w. cut 0.25c, s. s. cut 0.5c, June 14.

Magnolia Petroleum—Mobilgas:

Little Rock, s. s. up 0.5c, June 10; kerosine up 1c, June 7.

S. O. California—Standard and Flight:

Los Angeles, t. w. cut 1c as well as s. s. on June 8.

Price War Reported In Montreal

MONTREAL, June 22.—A gasoline price war has developed here due to the action of St. Lawrence Oil Products Limited, of which C. Wyatt, an American, is head, cutting prices in the chain of outlets it controls. These are known as the "Joy" stations.

Third grade gasoline is now being sold at 13½ cents per imperial gallon, plus 6 cents tax; Blue Sunoco at 15 cents; Imperial Three Star at 15 cents, and Super Shell at 17 cents.

The cut-rate gas which started the war is said to be imported from Roumania. It complied fully with the tests of Customs authorities and paid the usual duty and excise taxes.

Old line companies have endeavored to have restrictions put on the operations of St. Lawrence Oil Products through the enforcement of a provincial statute passed on May 18 and put into effect by order-in-council on June 7 whereby gasoline companies have to comply with the ratings given, among other things, and to affix to their pumps a sign indicating what grade of gas is being sold. Failure to do this will render the vendor liable to lose his license to sell, or have it suspended, by the Department of Gasoline Service. Under the Act, Grade 1 gasolines must have a minimum of 75 octane; Grade 2, a minimum of 66 octane; Grade 3, a minimum of 56 octane; while Grade 4 comprises those gasolines rating below 56 octane.

Mr. Wyatt claims his company's gasoline rates 66 octane, but the other oil companies claim it is 63 octane and should therefore be classed as Grade 3. The government is making a second test of it to settle the dispute. Government inspectors are now covering the island of Montreal, to make sure all pumps have signs showing the grades of gas they contain.

Motor Vehicle Registrations in 1934 Gained 4.64 per Cent Over 1933

CLEVELAND, June 24

MOTOR vehicle registrations in the U. S. in 1934 increased 1,106,113, or 4.64 per cent over 1933, according to the official report of the U. S. Bureau of Public Roads. The principal gain in registrations was in passenger cars, 21,524,068 being registered in 1934, as compared with 20,600,543 in 1933.

State registration and license fees increased nearly $3,000,000, or 0.99 per cent over 1933. Seventeen states showed decreases in receipts, ranging from 1.54 per cent in New Mexico to 48.22 per cent in West Virginia. Increases ranged from 0.08 per cent in Missouri to 29.64 per cent in New York.

Vehicle registrations decreased in only four states, Illinois, Massachusetts, Washington and West Virginia. Decreases ranged from 0.46 per cent in Illinois to 14.43 per cent in West Virginia. Increases ranged from 0.42 per cent in South Dakota to 24.64 per cent in South Carolina.

Official figures by states, and per cent of change in 1934 over 1933 are shown in an accompanying table.

Registrations by States, 1934 and 1933

State	Vehicles Registered 1934	Vehicles Registered 1933	% Change 1934 over 1933	License and Registration Receipts, 1934	License and Registration Receipts, 1933	% Change 1934 over 1933
Alabama	225,732	206,361	+9.38	$ 3,188,000	$ 2,724,257	+17.02
Arizona	96,586	89,496	+10.79	759,000	647,816	+17.16
Arkansas	198,091	188,242	+5.23	2,184,000	1,768,850	+23.47
California	2,006,255	1,958,807	+2.42	10,140,000	9,866,449	+2.77
Colorado	274,231	266,491	+2.90	2,172,000	1,746,823	+24.34
Connecticut	357,787	314,751	+13.67	7,948,000	7,850,589	+1.24
Delaware	54,240	51,099	+6.14	883,000	1,014,333	—12.94
Florida	335,205	279,265	+20.03	4,409,000	4,994,882	—11.72
Georgia	376,993	330,147	+14.18	1,193,000	1,036,241	+15.12
Idaho	108,863	96,255	+13.09	1,560,000	1,401,849	+11.28
Illinois	1,456,241	1,463,050	—0.46	18,278,000	16,229,327	+12.62
Indiana	803,271	770,071	+4.22	7,260,000	7,846,883	—7.47
Iowa	666,440	632,292	+5.40	10,034,000	10,695,407	—6.18
Kansas	528,664	517,987	+2.06	3,278,000	3,056,837	+7.23
Kentucky	332,177	294,547	+12.77	3,013,000	4,174,076	—27.81
Louisiana	244,007	232,688	+4.86	4,380,000	4,052,816	+8.07
Maine	178,995	168,173	+6.43	3,165,000	2,909,237	+8.79
Maryland	332,892	313,274	+6.26	3,523,000	3,581,251	—1.62
Massachusetts	785,392	789,788	—0.55	6,634,000	6,035,102	+9.92
Michigan	1,148,953	1,077,209	+6.66	15,901,000	18,560,314	—14.32
Minnesota	697,672	679,243	+2.71	6,867,000	6,366,982	+7.85
Mississippi	174,934	164,688	+6.22	1,950,000	1,870,396	+4.25
Missouri	739,813	698,362	+5.93	7,344,000	9,356,828	—21.51
Montana	128,336	110,245	+16.40	1,071,000	1,070,104	+0.08
Nebraska	406,632	390,651	+4.09	1,945,000	1,721,834	+12.96
Nevada	32,230	28,324	+13.79	248,000	299,634	—17.23
New Hampshire	113,134	107,631	+5.11	2,477,000	2,167,421	+14.28
New Jersey	864,641	845,734	+2.23	15,614,000	15,377,843	+1.53
New Mexico	82,900	76,643	+8.16	843,000	666,748	+26.43
New York	2,269,355	2,240,757	+1.27	41,664,000	42,318,407	—1.54
North Carolina	439,351	382,308	+14.92	6,944,000	5,356,126	+29.64
North Dakota	156,203	153,889	+1.50	1,291,000	1,382,008	—6.58
Ohio	1,613,265	1,554,314	+3.79	19,961,000	17,677,551	+12.91
Oklahoma	477,292	451,712	+5.66	3,251,000	3,382,455	—3.88
Oregon	274,117	239,410	+14.49	4,062,000	5,337,137	—23.89
Pennsylvania	1,681,202	1,635,019	+2.82	30,842,000	29,184,792	+5.67
Rhode Island	142,394	136,261	+4.50	2,315,000	2,198,342	+5.30
South Carolina	202,834	162,735	+24.64	2,831,000	2,503,367*	.....
South Dakota	169,975	169,249	+0.42	1,314,000	1,459,027	—9.93
Tennessee	336,313	312,180	+7.73	3,322,000	2,940,010	+12.99
Texas	1,312,152	1,201,762	+9.18	14,921,000	12,747,489	+17.05
Utah	101,926	100,362	+1.55	966,000	797,598	+21.11
Vermont	77,921	73,576	+5.90	2,157,000	2,072,717	+4.06
Virginia	373,908	344,704	+8.47	4,947,000	6,090,279	—18.77
Washington	422,238	427,406	—1.20	2,727,000	2,482,758	+9.83
West Virginia	194,231	226,985	—14.43	1,987,000	3,837,922	—48.22
Wisconsin	709,359	670,797	+5.74	10,051,000	9,768,006	+2.89
Wyoming	64,990	52,560	+23.64	437,000	679,411	—35.67
Dist. of Columbia	163,070	149,790	+8.86	677,000	625,508	+8.23
Totals	24,933,403	23,827,290	+4.64	$304,928,000	$301,932,039	+0.99

*10 months ended Oct. 31, 1933

Defines Credit Allowables In Lubricant Purchases

Because the interpretation of the Revenue Act of 1932 has been subject to question, a ruling relating to the amount of credit allowable to the purchaser of tax-paid lubricating oil used in the manufacture of refined lubricating oil subject to tax has been reprinted by National Petroleum Association. The ruling concerns a case in which two gallons of every 10 gallons of tax-paid oil purchased was used in the manufacture of a non-lubricating article.

The opinion of the office of the assistant general counsel for the Bureau of Internal Revenue is "that credit may be taken by the purchaser only to the extent of the tax paid by him on the sale of its refined lubricating oil; and that there is no authority in existing law under which it may also take credit for the tax paid on the oil used in the production of the non-lubricating article."

The purchaser in the case contended that he was entitled to a credit of the amount of tax paid on the total purchase rather than upon 0.8 which was resold as refined lubricating oil.

It is stated further that if the purchaser had elected to purchase the constituent oil tax-free under the provisions of section 620 of the law, and had complied with the regulations prescribed for such sales, freedom from tax could have been secured to the extent that it was put into a channel of consumption for a use other than that of lubrication.

Article 11 of Regulations 44, as amended by Treasure Decision 4339 (C.B. XI-2,446), provides in part as follows:

"Lubricating oils" are all oils sold as such and all oils sold or used for lubrication. A particualr oil having both lubricating and non-lubricating uses is taxable unless (1) it is put into a channel of consumption or distribution for a use other than that of lubrication, under a name identifying it for such use and (2) the manufacturer obtains from the purchaser a certificate to the effect that the oil will be used by the purchaser for a stated purpose other than that of lubrication or resold by him only to a person who in turn furnishes a similar certificate.

Section 621 of the Revenue Act of 1932 provides in part that:

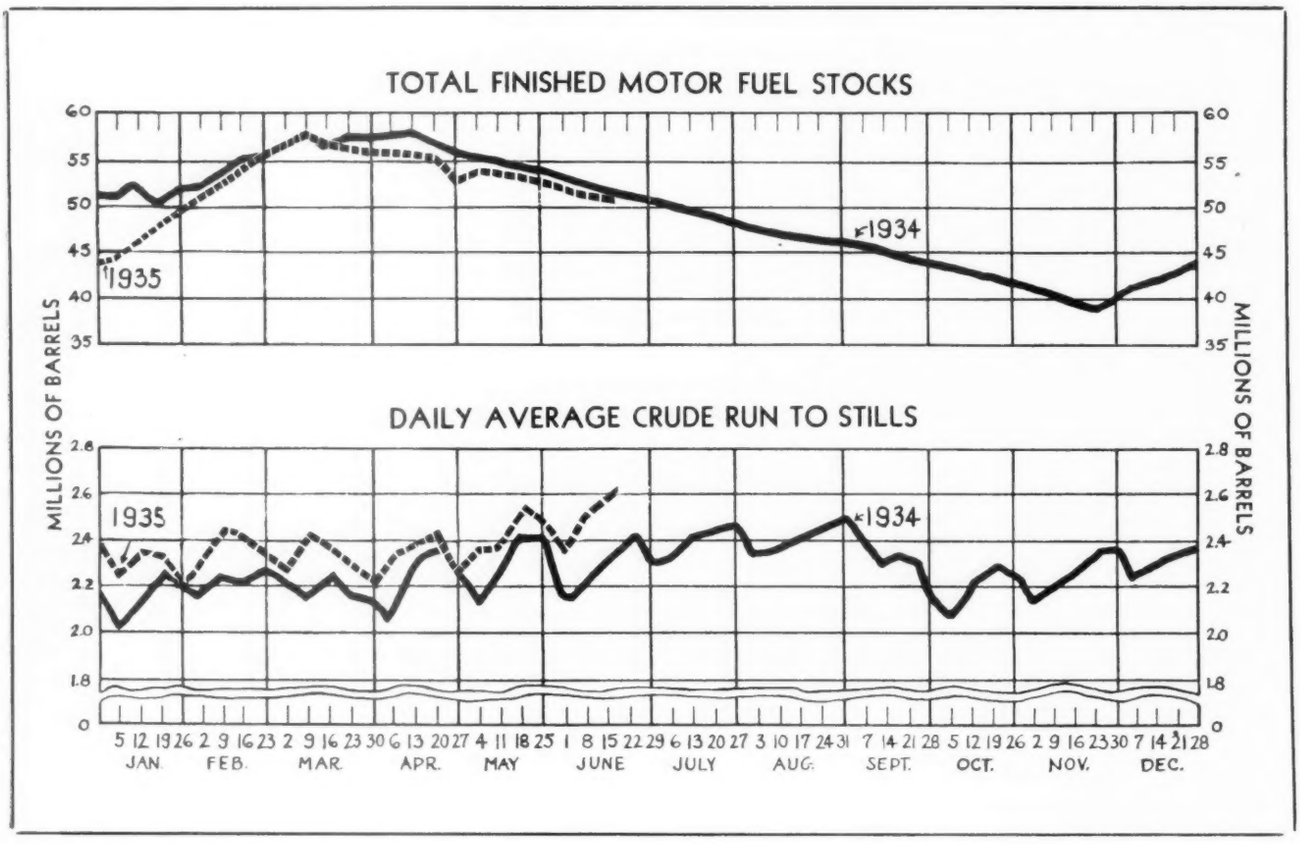
(a) A credit against tax under this title, or a refund, may be allowed or made—

(1) to a manufacturer or producer, in the amount of any tax under this title which has been paid with respect to the sale of any article . . . purchased by him and used by him as material in the manufacture or production of, or as a component part of, an article with respect to which tax under this title has been paid, or which has been sold free of tax by virtue of section 620, relating to sales of articles for further manufacture.

Conry Elected Vice-President

TULSA—J. J. Conry, for many years general superintendent of production for Carter Oil Co., was elected a vice-president of the company on June 20.

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.


TOTAL FINISHED MOTOR FUEL STOCKS
MILLIONS OF BARRELS
1935
1934
DAILY AVERAGE CRUDE RUN TO STILLS
MILLIONS OF BARRELS
1935
1934
5 12 19 26 2 9 16 23 2 9 16 23 30 6 13 20 27 4 11 18 25 1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21 28 5 12 19 26 2 9 16 23 30 7 14 21 28
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Bulk Motor Fuel Stocks Decrease 1,401,000 Barrels

NEW YORK, June 25

BULK stocks of motor fuel continued downward, with stocks totaling 62,010,000 barrels the week ended June 22, a decrease of 1,401,000 barrels from the previous week, according to the American Petroleum Institute. This compares with stocks of 63,011,000 barrels a year ago.

Refiners generally increased crude runs to stills or kept them on an even keel with the previous week. Runs increased 65,000 barrels daily, to 2,606,000 daily average the past week. A year ago crude runs were 2,420,000 barrels daily. The East Coast and Oklahoma-Kansas-Missouri district plants increased runs 15,000 barrels each, and others increased less while slight decreases were reported in the Gulf and North-Louisiana-Arkansas plants.

Refinery stocks of motor fuel declined 839,000 barrels, standing at 30,835,000 barrels June 22. In-transit and terminal stocks declined 589,000 barrels, to 19,290,000 barrels and stocks of unfinished gasoline declined 63,000 barrels, to 6,185,000 barrels. Stocks of other motor fuels gained 90,000 barrels, to 5,700,000 barrels.

Stocks of total finished motor fuel were drawn on by 1,428,000 barrels, these totaling 50,125,000 barrels on June 22. East Coast and Texas Gulf stocks showed the greatest declines, these being 421,000 barrels and 404,000 barrels respectively. Stocks at the Louisiana Gulf declined 272,000 barrels and in California declined 290,000 barrels. Only two districts reported gains, and these were small in the Appalachian and Oklahoma-Kansas-Missouri.

Operating capacity of reporting plants increased nearly 2 per cent with the largest increase, one of 15 per cent, in Rocky Mountain plants.

Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Total Finished Motor Fuel*		Total Finished Motor Fuel*		Gas & Fuel Oil		Cracked Gasoline Production % Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		June 22	June 15	June 22	June 15	June 22	June 15	June 22	June 15	June 22	June 15		June 22	June 15
East Coast	100.0	482,000	467,000	78.8	76.3	16,174	16,595	11,174	10,492			87.8	94,000	86,000
Appalachian	94.8	119,000	108,000	81.5	74.0	2,209	2,197	777	744			98.7	26,000	27,000
Ind., Ill., Ky.	95.9	385,000	381,000	90.8	89.9	9,058	9,131	4,501	4,379			96.8	121,000	118,000
Okla., Kans., Mo.	84.8	281,000	266,000	73.2	69.3	4,925	4,880	4,370	4,200			89.1	63,000	66,000
Inland Texas	48.5	102,000	94,000	63.8	58.8	1,127	1,135	2,000	1,930			70.9	23,000	23,000
Texas Gulf	95.4	566,000	569,000	95.1	95.6	5,053	5,457	9,944	9,627			98.5	112,000	110,000
La. Gulf	96.4	113,000	118,000	69.3	72.4	1,168	1,440	3,717	3,721			96.1	16,000	22,000
No. La., Ark.	90.0	47,000	49,000	65.3	68.1	262	279	349	333			95.7	7,000	8,000
Rocky Mt.	61.9	49,000	40,000	81.7	66.7	928	928	817	786			84.8	14,000	12,000
California	92.6	452,000	449,000	58.6	56.9	9,221	9,511	64,044	63,950			100.0	58,000	50,000
TOTAL	89.5	2,606,000	2,541,000	76.5	74.6	50,125	51,553	101,693	100,162			92.5	534,000	522,000

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.

Light Fuel Prices Continue Downward; Heavy Oils Steady

DEMAND for fuel oil was light in the week ended June 22 as evidenced from reports over the country.

While indications were that the light demand for the lighter oils was seasonal, there was little material being purchased for storage purposes against next winter's use. Middle western buyers reported that present prices prohibited this type of buying.

Railroads and cracking plants were active buyers of heavy fuel oils in East Texas, and prices were higher in that district. Pennsylvania fuel oil prices ruled relatively steady. Industrial demand has eased off slightly, according to reports. Cracking plants continued to keep the lower field free of surplus offerings.

* * *

NEW YORK, June 22.—Fuel oil markets showed the effect of light seasonal demand in some quarters and reductions were made in prices of No. 4 oil at New York harbor, Philadelphia and Baltimore. The new prices which were quoted by many traders were 3.625 cents for tank car delivery. Competitive conditions forced the reductions, it was stated.

On the other hand, the status of No. 2 oil improved at New York harbor. While demand was no better than previously, a number of sellers who had offered this grade at 3.75 cents in barge lots, advanced their prices to the general level of 3.875 cents.

The reductions in diesel oil prices which were made at Atlantic and Gulf Coast ports late last week, also were extended to West Indies and Panama ports, Standard of New Jersey announced. New schedules are: Cristobal, Balboa, and Kingston, $1.55; St. Thomas, Curacao, Aruba, and Trinidad, $1.45. Prices at Havana and Bermuda are "subject to inquiry."

* * *

CHICAGO, June 22.—"Summer fills" was the chief topic of conversation among buyers and sellers in the Mid-Western tank car market for fuel oils the week ended June 22.

The opinion, voiced by many traders, was that present prices were too high for jobbers to fill storage, and they were looking for further price recessions which would encourage this type of buying. Nos. 1 and 2 oils continued to edge lower as offerings were exceeding demand. For the most part the flush offerings were originating in East Texas.

One jobber reported that he was in the market for approximately 60 cars of Nos. 1 and 2 oils, but that present prices were much too high for him to consider filling storage.

Movement over the next 60 days, consequently, will hinge on the status of prices, if reports of buyers and sellers alike are to be taken at face value.

Heavy fuel oils were relatively steady, with movement reported slow. Despite the slow movement the lack of surplus offerings was creating a good balance for these oils.

* * *

TULSA, June 22.—Mid-Continent suppliers of the lighter grades of gas and fuel oil looked upon the present unsteadiness of the No. 1 and 2 grades as merely a seasonal reaction. Prices, they reported, were reflecting the usual end-of-the-season slump, for which there apparently was no remedy. Some expected a slight pickup in movement of oil suitable for use in tractors, providing the weather clears.

A scramble for East Texas fuel oil suitable for cracking stock and use in locomotives was under way. Buyers apparently were grabbing up any and all available supplies. With demand brisker, refiners were asking higher prices. Refiners who were using uncracked fuel for charging stock were paying up to $0.65 per barrel. Railroads were considering offerings of "railroad" fuel priced as high as $0.70. Actual sales at that level, however, could not be checked.

The fuel oil situation generally was unchanged in other Mid-Continent districts.

Fuel Oils

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

Prices in Effect June 24, 1935

	No. 1	No. 2	No. 3	No. 4
S. O. New Jersey				
Newark, N. J.	7.5	6	6	6
Atlantic City, N. J.	8	6.5	6.5	6
Baltimore, Md.	7.5	6	6	5.5
Washington, D. C.	8	6.5	6.5	6.5

Discounts: At Newark and Atlantic City, purchasers taking 50,000 gals. get discount of 0.5c per gal.

Socony-Vacuum Oil Co., Inc. (S. O. New York Division)				
New York City	7.25	6.25	6.25	5.75
Albany, N. Y.	7.5	6.5	6.5	6.5
Rochester, N. Y.	8.5	7	7	7
Boston, Mass.	7	6.25	6.25	6.25
Bangor, Me.	9.5	6.5	6.5	6.5
Manchester, N. H.	9	7.25	7.25	7.25
Burlington, Vt.	8.5	7	7	7
New Haven, Conn.	7.5	6	6	6
Providence, R. I.	7	6	6	6

Discounts: At New York City, consumers taking 10,000 to 50,000 gals., get 0.25c per gal. discount when minimum amount has been reached; above 50,000 gals., 0.5c.

	No. 1	No. 2	No. 3	No. 4
Atlantic Refining				
Philadelphia, Pa.	6.50	5.50	....	5.5
Allentown, Pa.	9	7.5	7.5	7.5
Wilmington, Del.	8.5	7	....	6.5
Springfield, Mass.	8.75	7.25	....	7.25
Worcester, Mass.	8.75	7.25	....	7.25
Hartford, Conn.	8.5	7	....	7
S. O. Ohio				
Ohio Statewide	8	7.75	7.50	7.25

Note: S. O. Ohio prices are for hose dumps; bucket dumps are 0.5c per gallon higher.

S. O. Indiana

Stanolex Fuel Oil No. 1

Chicago	7.3
Indianapolis, Ind	*13.4
Detroit, Mich	7.5
Minneapolis, Minn	9.2
Sioux City, Ia	8.8
St. Louis, Mo	8.5
Kansas City, Mo	8.2

*Includes state tax of 4c.

Discounts: at Chicago above price applies on 150 gals. or more; 100 to 149 gals., 0.5c higher, under 100 gals., 1.5c higher. Indianapolis and Detroit 1c off t.w. price for deliveries of 100 gals. and over; at St. Louis, 1c off for 50 gal. dumps and over; at other above points, 1c off t.w. price for deliveries 150 gals. and over.

Four More Directors For Kansas Assoc.

WICHITA, June 22.—Four additional directors of the Kansas Oil Men's Association were announced this week by E. W. Fawcett, secretary.

The directors are R. M. Marks, Cunningham & Marks, Baxter Springs, Zone 3; Sid Tolbert, Tolbert Oil Co., Concordia, Zone 4; Ed. Taylor, Kansas Home Oil Co., Kinsley, Zone 6; C. S. Bishop, Dodge City Oil Department, Dodge City, Zone 8.

Appointment of directors by zones, to organize jobbers by counties under county chairmen, is part of the association reorganization program started at the annual meeting this year.

Commodity Exchange

NEW YORK, June 24.—Gasoline prices showed wide fluctuations on the Commodity Exchange this week, with most of the active trading taking place on material for June delivery. Sales of 12 lots were made June 21 at prices ranging from 5.09 to 5.66 cents, all for June delivery. Two sales were made earlier in the week, one for June and one for July delivery.

No crude oil sales were made.

GASOLINE FUTURES

Week Ended June 22, 1935

Month	High	Low	Close
June	5.71	5.09	5.60-5.70
July	5.74	5.74	5.62B

B—Bid.

Note: Gasoline trading in 1000-barrel units: U. S. Motor 55-59 octane, deliverable from Exchange license storage in Houston-Galveston (Texas) area. Crude oil trading in 2000-barrel units: Oklahoma-Kansas, 36-36.9 gravity legally produced oil, deliverable from Exchange licensed storage in Houston-Galveston area and Cushing-Drumright (Okla.) area. Deliveries of other grades of gasoline and crude subject to premiums or discounts set forth in Exchange by-laws.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well, A. P. I. gravity. Prices are effective as of 7 a.m. of dates as given.

Eastern Fields

Posted by Joseph Seep Purchasing Agency

(Effective May 16, 1935, except Corning effective Oct. 2, 1933)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$1.92
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$1.87
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1.77
Corning Oil in Buckeye Pipe Lines (Ohio)..$1.32

Posted by Other Companies

Tide Water Pipe Co., Ltd.:
Bradford-Alleghany district (Penna. and N. Y.) (Effective May 16, 1935).....$2.20
The Pennzoil Co.: (Effective May 16, 1935) Penna. Grade Oil in National Transit Lines$2.17
Ashland Oil & Transportation Co.:
Somerset Oil in Ashland Lines (Ky.) (Effective May 20, 1935).....$1.13

*The Pennzoil Co. posts $2.17 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields; prices in other districts range down to $2.12 per bbl. at well.

Michigan

(Posted by Pure Oil Co.)

Midland, Midland County (Sept. 30, 1933)..$1.02

(Posted by Simrall Pipe Line Corp.)

West Branch (Apr. 1, 1934).....$0.86

Central States Fields

Posted by Ohio Oil Co.

Effective Feb. 1, 1935)		(Effective May 22, 1935)	
Lima	$1.15	West. Kentucky	$1.13
(Effective Jan. 5, 1934)			
Princeton	$1.13	Illinois	$1.13

Canadian Fields

Posted by Imperial Oil Refineries, Ltd.

Western Ontario

(Effective Sept. 9, 1933)

Petrolia.....$2.10
Oil Springs.....$2.17

Alberta—Turner Valley

(Prices f.o.b. field tankage)

Crude: (Effective Dec. 9, 1933)		Naphtha: (Effective May 21, 1934)	
40-44.9	$1.50	†Clear	$2.31
45 49.9	2.07	†Discolored	$2.55
(Effective May 21, 1934)			
50 and above	$2.19		

†Clear naphtha: 22 color; 10 lbs. vapor pressure, Reid method; 90% recovery; end point, 410°, Discolored naphtha: same specifications as for clear naphtha except color.

Mid-Continent

Posted by Stanolind Crude Oil Purchasing Co

(Effective Sept. 29, 1933)

(In Oklahoma-Kansas)		(In North-North Central Texas)
Below 29	$0.84	$0.79
29-29.9	0.86	0.81
30-30.9	0.88	0.83
31-31.9	0.90	0.85
32-32.9	0.92	0.87
33-33.9	0.94	0.89
34-34.9	0.96	0.91
35-35.9	0.98	0.93
36-36.9	1.00	0.95
37-37.9	1.02	0.97
38-38.9	1.04	0.99
39-39.9	1.06	1.01
40 and above	1.08	1.03

Above Stanolind prices met as follows:

Sept. 29, by The Texas Co. in Oklahoma, and in North and North Central Texas; Continental Oil in all three states; by Empire, White Eagle and Gypsy (Gulf).

See also Carter Oil, Magnolia, Humble schedules below and footnotes under Carter table.

Posted by Carter Oil Co.

(In Oklahoma and Kansas)

(Effective Sept. 29, 1933)

Below 25	$0.76	33-33.9	$0.94
25-25.9	0.78	34-34.9	0.96
26-26.9	0.80	35-35.9	0.98
27-27.9	0.82	36-36.9	1.00
28-28.9	0.84	37-37.9	1.02
29-29.9	0.86	38-38.9	1.04
30-30.9	0.88	39-39.9	1.06
31-31.9	0.90	40 and above	1.08
32-32.9	0.92		

Sept. 29, Carter gravity and price schedule met in Oklahoma-Kansas by Sinclair-Prairie, and Humble price schedule met in North-North Central Texas except that Sinclair-Prairie posts five lower grades down to below 25, with 2c differential for each. Same day, Shell Petroleum met Carter in full in Oklahoma-Kansas.

Posted by Magnolia Petroleum Co.

(Effective Sept. 29, 1933)

In Oklahoma, same schedule as Carter Oil, which see above, beginning with below 25, at $0.76 and ending with 40 & above, at $1.08.

In Texas: North and North Central, including Burkburnett, Archer, Stephens, Henrietta, Electra, Comanche and Olden; and in Central Texas, including Mexia, Wortham, and Panola county, same gravity and price schedule as Stanolind in Texas, which see above, beginning with below 29 at $0.79, and ending with 40 and above, at $1.03.

†Posted by Humble Oil & Refining Co.

*(*In North, North Central and Central Texas)*

(Effective Sept. 29, 1933)

Below 29	$0.79	35-35.9	$0.93
29-29.9	0.81	36-36.9	0.95
30-30.9	0.83	37-37.9	0.97
31-31.9	0.85	38-38.9	0.99
32-32.9	0.87	39-39.9	1.01
33-33.9	0.89	40 and above	1.03
34-34.9	0.91		

*Including North Texas, Ranger, Mexia, Powell, Boggy Creek, Richland, Wortham, Currie and Moran fields.

†Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60F.

Panhandle Texas

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

	Gray County	Carson-Hutchinson
Below 35	$0.79	$0.69
35-35.9	0.81	0.71
36-36.9	0.83	0.73
37-37.9	0.85	0.75
38-38.9	0.87	0.77
39-39.9	0.89	0.79
40 & above	0.91	0.81

Sept. 29, above prices met by Sinclair-Prairie, Magnolia and The Texas Co. in the entire area, also by Continental Oil in Carson-Hutchinson.

East Texas

(Effective Sept. 29, 1933)

Stanolind, Humble, Sinclair-Prairie, Texas and Magnolia.....$1.00

West Texas and New Mexico

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

Ector, Pecos and Winkler Counties, W. Texas and Lea Co., N. M.....$0.75
Crane, Upton, Crockett, Howard and Glasscock county, W. Tex.....$0.70

Sept. 29, Magnolia met in Crane, Upton, Howard, Glasscock, Mitchell and Winkler. Sept. 29, Texas Co. met Humble in Winkler, Crane, Upton and Lea counties; Stanolind Oil & Gas met in Hendrich field, Winkler county and posted in Marion county, Tex. below 25 at $0.63, plus 2c differential to 40 & above at $0.95.

South and Southwest Texas

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

Darst Creek	$0.87	Mirando	$0.80
Salt Flat	0.87	Pettus	1.05
Saxet	0.85	Tomball	1.15

Sept. 30, The Texas Co. met Humble in Darst Creek. On Sept. 29 it posted $0.80 in Duval county and $0.85 in Saxet-Greta.

Oct. 2, Magnolia posted $0.87 in Darst Creek and $1.15 in Tomball; Sept. 29 it posted $0.80 in Mirando, $0.75 in Luling and $0.95 in Lytton Springs.

Jan. 11, 1934 Magnolia posted $1.00 for Cleveland, Liberty county, Tex.

Posted by Humble

Conroe *(Montgomery Co., Tex.)*

(Effective Sept. 29, 1933)

35-35.9	$1.09	38-38.9	$1.15
36-36.9	1.11	39-39.9	1.17
37-37.9	1.13	40 & above	1.19

Sept. 30 Texas Co. met above prices.

North Louisiana-Arkansas

Posted by Standard Oil Co. of Louisiana

(Effective March 17, 1934, except Homer, Smackover and Nevada county, Sept. 29, 1933).

(In Caddo, Homer, Haynesville, Sabine, De Soto, Sarepta, Carterville, El Dorado and Miller county).

Below 25	$0.71	33-33.9	$0.89
25-25.9	0.73	34-34.9	0.91
26-26.9	0.75	35-35.9	0.93
27-27.9	0.77	36-36.9	0.95
28-28.9	0.79	37-37.9	0.97
29-29.9	0.81	38-38.9	0.99
30-30.9	0.83	39-39.9	1.01
31-31.9	0.85	40 and above	1.03
32-32.9	0.87		

Smackover, Ark.....$0.70
Nevada, Ark..... 0.60
Urania, La. (La. Oil Refg. Co., Jan. 1, '34)... 0.87

*Gulf Coastal Fields

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

Below 20	$0.82	27-27.9	$0.98
20-20.9	0.84	28-28.9	1.00
21-21.9	0.86	29-29.9	1.02
22-22.9	0.88	30-30.9	1.04
23-23.9	0.90	31-31.9	1.06
24-24.9	0.92	32-32.9	1.08
25-25.9	0.94	33-33.9	1.10
26-26.9	0.96	34 and above	1.12
Refugio heavy			$0.85

Effective Dec. 1, 1934 Humble prices are based on 99% tank tables at 60 F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60 F.

*Includes these fields: Barbers Hill, Goose Creek, Hull, Humble, Liberty, Moss Bluff, Orange, Pierce Junction, Rabbs Ridge, Raccoon Bend, Refugio light, Sour Lake, Spindletop, Sugarland, and West Columbia.

Above prices met Sept. 29 by Sinclair-Prairie and Sun Pipe Line Co.

Posted by The Texas Co.

(Effective Sept. 30, 1933)

Same gravity and price schedule as Humble up to 30-30.9 gravity, which see; plus these grades:

30-30.9	$1.04	36-36.9	$1.10
31-31.9	1.05	37-37.9	1.11
32-32.9	1.06	38-38.9	1.12
33-33.9	1.07	39-39.9	1.13
34-34.9	1.08	40 and above	1.14
35-35.9	1.09		

Partlavaca (Tex. Gulf effective May 17, 1935).$0.80

Rocky Mountain Fields

Posted by Stanolind Oil & Gas Co.

(Effective Sept. 29, 1933)

Salt Creek and Dutton Creek, Wyo. Same schedule as Stanolind posts in Oklahoma-Kansas which see on first crude price page.

Elk Basin, light.....$1.18
Grass Creek, light..... 1.18
Grass Creek, heavy..... 0.62
Greybull-Torchlight..... 1.18
Iles, light, Col..... 0.96
Iles, heavy..... 0.90
Hogback, N. M..... 1.11
Frannie light (Effective May 1, 1934)..... 0.70
Frannie heavy..... 0.62

Posted by Ohio Oil Co.

(Effective Sept. 29, 1933)

Elk Basin, Wyo.....$1.18
Grass Creek, light..... 1.18
Rock Creek..... 1.02
Big Muddy..... 1.01
Sunburst, Mont..... 1.35

Posted by *Internationa Refining Co.

(Effective May 23, 1934)

Cutbank, Mont.....$1.45

*Texas Co. subsidiary.

(Continued on next page)

Road Oil Sales Fifth Greater in 1934

CLEVELAND, June 21.—Road oil sales were one-fifth greater in 1934 than in 1933 on account of increased construction of secondary and farm-to-market roads, especially west of the Mississippi, financed largely by federal funds. So reported J. W. Finch, director of the Bureau of Mines.

From 6,238,898 barrels, valued at $6,289,119 in 1933, sales of road oil by petroleum refineries in the U. S. increased to 7,702,753 barrels, valued at $10,741,998 in 1934. Increased demand raised the average value of road oil from $1.01 in 1933 to $1.39 in 1934. Only 788,919 barrels were made from foreign crude. The distribution by districts is given in the accompanying table:

District	1933 Barrels	1933 Value	1934 Barrels	1934 Value
East Coast	863,656	$1,243,813	938,053	$1,392,665
Appalachian	137,868	222,770	88,195	186,298
Ind.-Ill.-Ky.	1,828,844	1,666,754	1,984,414	2,390,175
Okla.-Kan.-Mo.	661,953	597,792	942,072	1,071,260
Texas:				
Gulf coast	165,141	199,619	204,888	274,188
Rest of State	61,826	38,691	79,969	79,963
	226,967	238,310	284,857	354,151
Louisiana-Arkansas:				
La. Gulf coast	48,814	68,469	52,464	95,089
N. La. and Ark.	101,241	63,865	157,992	158,104
Total	150,055	132,334	210,456	253,193
Rocky Mountain	484,505	531,582	1,023,434	1,431,920
California	1,885,050	1,655,764	2,231,272	3,662,336
Grand total	6,238,898	$6,289,119	7,702,753	$10,741,998

New Asphalt Institute Office

NEW YORK, June 24.—J. E. Pennybacker, managing director of the Asphalt Institute, announces the opening of a new field office in Cincinnati, with quarters in the Enquirer Bldg. The office will be under the direction of Major Walter R. Macatee, who was for a number of years identified with the asphalt industry and later with the Portland Cement Association. Its district will comprise Ohio, West Virginia, Kentucky, Indiana and southern Michigan.

C. S. McCornack Dies

CHICAGO—C. S. McCornack, 62, died suddenly June 21, from a heart attack during a golf match at the St. Charles Country club.

Mr. McCornack was one of the old timers in the industry, his association dating back more than 30 years. He was one of the pioneer jobbers in the northern part of Illinois. Mr. McCornack was head of the McCornack Oil Co. of St. Charles, Ill., and vice-president of Refiners Petroleum Co., Chicago, which is headed by a brother, R. A. McCornack.

His wife, Mrs. C. A. McCornack, two sons and a daughter survive. Funeral services were held June 24 at St. Charles.

Heads Auto Makers Assoc.

DETROIT, June 24.—Alvan Macauley, president of the Packard Motor Car Co., was re-elected president of the Automobile Manufacturers Association at a meeting held here June 19. This will be his seventh term in that office.

At this meeting of the association it was predicted that sales for 1935 will total 3,525,000 cars and trucks, making this the largest production year since 1929.

CRUDE OIL MARKETS

Continued from preceding page

CALIFORNIA, Posted by Standard Oil of California

All gravities above those quoted take highest price offered in the field. Effective Sept. 6, 1933

Gravity	Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa De Rey	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Elwood Terrace	Torrance	Richfield	Whittier-La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway Sunset Elk Hills Buena Vista Hills	Lost Hills	Coalinga	Wheeler Ridge	Santa Paula (Union Oil Co.)	Orcutt (Union Oil Co.)
14-14.9	$0.65	$0.65	$0.65	$0.65	$0.65	$0.65	....	....	$0.65	$0.65	$0.65	$0.65	$0.65	....	$0.57	$0.57	$0.57	$0.57	$0.57	$0.57	....
15-15.9	.65	.65	.69	.69	.66	.69	....	....	.66	.65	.65	.65	.65	....	.57	.57	.57	.57	.57	.57	....
16-16.9	.66	.65	.72	.73	.69	.73	....	....	.69	.67	.68	.65	.65	....	.57	.57	.57	.57	.57	.57	$0.57
17-17.9	.69	.65	.75	.76	.73	.76	....		.72	.70	.71	.65	.68	....	.57	.57	.57	.57	.57	.57	.57
18-18.9	.72	.65	.78	.80	.76	.79	....		.75	.74	.74	.65	.71	....	.57	.61	.61	.59	.58	.60	.61
19-19.9	.75	.65	.81	.83	.80	.82	....		.78	.78	.78	.65	.74	....	.57	.64	.65	.62	.61	.63	.64
20-20.9	.78	.68	.83	.87	.83	.85	....		.81	.82	.81	.66	.78	....	....	.67	.69	.65	.64	.66	.67
21-21.9	.81	.72	.86	.90	.87	.88	....		.83	.85	.85	.69	.81	$0.72	....	.70	.73	.68	.67	.69	.70
22-22.9	.84	.76	.89	.94	.90	.92	....		.86	.89	.87	.72	.84	.76	....	.73	.76	.72	.70	.72	.73
23-23.9	.88	.81	.92	.97	.94	.95	$0.83		.89	.93	.90	.76	.87	.79	....	.77	.79	.75	.73	.75	.77
24-24.9	.91	.85	.95	1.01	.97	.98	.86		.92	.97	.93	.80	.90	.83	....	.81	.82	.78	.76	.78	.81
25-25.9	.94	.89	.98	....	1.00	1.01	.90	....	.95	1.00	....	.85	.93	.87	....	.85	.85	.81	.79	.81	.85
26-26.9	.97	.93	1.01	....	1.04	1.04	.94	....	.98	1.04	....	.89	.96	.90	....	.89	.88	....	....	.84	.89
27-27.9	1.00	.98	1.04	....		1.07	.97	....	....	1.08	....	....	.99	.94	....	.93	.91	....	....	.88	....
28-28.9	1.03	1.02	1.07	....		1.10	1.01	....	....	1.11	....	....	1.02	.98	....	.97	.94	....	....	.92	....
29-29.9	1.06	1.06	1.09	....		....	1.04	....	....	1.15	....	....	1.05	1.01	....	1.01	.97	....	....	.96	....
30-30.9	1.09	1.10	1.12	....		....	1.08	....	....				1.09	1.05	....	1.05	1.00	....	....	1.00	....
31-31.9	....	....	....	....		....	1.12	....	....				1.12	1.08	....	1.09	....	....	....	....	....
32-32.9	....	....	....	....		....	1.15	....	....		Kettleman Hills		1.15	1.12	....	1.13	....	....	....	....	....
33-33.9	....	....	....	....		....	....	$1.03	....		$0.93		1.18	1.16	....	1.17	....	....	....	....	....
34-34.9	....	....	....	....		....	....	1.06	....		.96		1.21	1.19	....		....	....	....	....	....
35-35.9	....	....	....	....		....	....	1.09	....		.99		....	1.23	....	....	....	....	....	....	....
36-36.9	....	....	....	....		....	....	1.12	....		1.02		....	1.26	....	....	....	....	....	....	....
37-37.9	....	....	....	....		....	....	1.15	....		1.05		....	1.30	....	....	....	....	....	....	....
38-38.9	....	....	....	....		....	....	....	....		1.08		....	1.34	....	....	....	....	....	....	....
39-39.9	....	....	....	....		....	....	....	....		1.11		....	....	....	....	....	....	....	....	....

Subject to Field Gathering Charge of 5c per Bbl.

SEABOARD MARKETS, Export *and* Coastwise

PRICES *DO NOT* INCLUDE FEDERAL TAX

Where $ mark is shown, prices are per barrel of 42 U. S. gallons.

Eastern Domestic

(Prices in cents per gallon tank car lots, unless otherwise noted, f.o.b. refinery or seaboard terminal, representing majority of sales and quotations to jobbers and/or consumers. Florida and S. Carolina inspection tax not included.)

*Motor Gasoline

Prices June 24	60-64 Octane	65 Octane and Above
New York harbor	6.00	6.25
New York harbor, barges	5.75	6.00
Philadelphia district	6.00	6.25
Baltimore district	6.00	6.25
Norfolk district	6.00	6.25
Wilmington, N. C., district	6.00	6.25
Charleston, S. C., district	6.00	6.25
Savannah district	6.25 – 6.50	6.50 – 6.75
Jacksonville district	6.25 – 6.50	6.50 – 6.75
Portland district	6.25	6.50
Boston district	6.00	6.25
Boston district, barges	5.75	6.00
Providence district	6.00	6.25
Providence district, barges	5.75	6.00

*Due to lack of companies offering U. S. Motor gasoline, 59 octane and below n the open market, prices for this grade are discontinued. Quotations nominally are 0.25c below those for 60-64 octane grade.

Water White Kerosine

Prices June 24			
New York harbor	5.00	Savannah district	5.50
N. Y. harbor, barges	4.75	Jacksonville district	5.50
Philadelphia district	5.50	Portland district	5.25
Baltimore district	5.25	Boston district	5.00
Norfolk district	5.50	Boston dist., barges	4.75 – 4.875
Wilmington, N. C.	5.50	Providence district	5.00
Charleston, S. C., dist.	5.50	Providence, barges	4.75 – 4.875

Fuel Oils

Prices June 24	New York harbor	New York harbor, barges	Philadelphia district
No. 1	5.00	4.75	5.25
No. 2	4.00	3.875	4.00
No. 3	4.00	3.875	4.00
No. 4	3.625	3.50	3.625– 4.00
No. 5 (per barrel)	$1.35	.....	$1.35
No. 6 (per barrel)	$1.15	.....	$1.15

	Baltimore district	Boston district
No. 1	5.25	5.00
No. 2	4.00	4.00
No. 3	4.00	4.00
No. 4	3.625– 4.00	4.00
No. 5 (per barrel)	$1.35	$1.45
No. 6 (per barrel)	$1.15	$1.15

	Boston dist., barges	Providence district	Providence dist., barges
No. 1	4.75 – 4.875	5.00	4.75
No. 2	3.875	4.00	3.875
No. 3	3.875	4.00	3.875
No. 4	3.875	4.00	3.875

	Bunker Oil Grade C Per Barrel	Diesel Oil Ships' Bunker[1] Per barrel	Gas Oil 28-34 Gravity Per gallon	Diesel Oil Shore Plants Per gallon
New York harbor	*$1.15	*$1.65	4.00	4.00
Philadelphia dist.	*$1.15	*$1.65	4.00	....
Baltimore district	*$1.15	*$1.65	4.00	....
Norfolk district	*$1.15	*$1.65	4.00	....
Charleston district	$1.10	$1.65	....	....
Savannah district	$1.10	$1.65	....	4.50
Jacksonville dist.	$1.10	$1.65	....	4.50
Tampa district	$1.10	$1.65	....	....
Portland district	$1.25	$1.75	....	....
Boston district	$1.15	*$1.65	....	....
Providence district	$1.15	$1.65	....	....

*Lighterage for bunker oil, 5c per bbl. additional; for Diesel oil, 6.5c per bbl. dditional.

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

Prices—	June 24	June 17	June 10
53-55 U. S. Motor	4.50 – 4.75	4.50 – 4.75	4.50 – 4.75
400 e.p. blend 65 Octane and above	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
38-40 w.w. kerosine, 150 fire point	4.25 – 5.00	4.25 – 5.00	4.25 – 5.00
41-43 w.w. kerosine	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
44 water white kerosine	5.00	5.00	5.00
Prime wh. kerosine	4.10 – 4.50	4.10 – 4.50	4.00 – 4.50
In Cargo lots, per barrel:			
Diesel fuel oil, above 23.9°	$1.10 –$1.25	$1.10 –$1.25	$1.10 –$1.25
Diesel fuel oil, under 23.9°	$1.05 –$1.15	$1.05 –$1.15	$1.05 –$1.10
30-34 gas oil	$1.10 –$1.15	$1.10 –$1.15	$1.05 –$1.10
Grade C fuel oil	$0.75 –$0.85	$0.75 –$0.85	$0.75 –$0.85
In Ships' Bunkers, or deep tank lots, per barrel:			
Diesel fuel oil, above 23.9 gravity	$1.275–$1.30	$1.275–$1.30	$1.275–$1.30
Diesel, under 23.9 gravity	$1.175–$1.20	$1.175–$1.20	$1.175–$1.20
Grade C fuel oil	$0.925–$0.95	$0.925–$0.95	$0.925–$0.95

Pacific Export (cont'd)	June 24	June 17	June 10
Cased Goods:			
Gasoline, U.S. Motor	$1.40 –$1.50	$1.40 –$1.50	$1.40 –$1.50
Gasoline, 400 e.p. blend	$1.60 –$1.75	$1.60 –$1.75	$1.60 –$1.75
38-40 w.w. kerosine, 150 fire point	$1.20 –$1.30	$1.20 –$1.30	$1.20 –$1.30
Kerosine, prime white	$1.05 –$1.15	$1.05 –$1.15	$1.05 –$1.15

New York Export

(Prices in cents per gallon in barrels, F.a.s. New York)

Cylinder Oils (Pennsylvania Products)

	June 24	June 17	June 10
Bright stock:			
Light, 25 pour point	24.00	24.00	23.50
Dark, 25 pour point	23.50	23.50	23.00
Neutral oil:			
200 3 color, 25 pour pt.	28.50 –29.00	28.50 –29.00	28.50 –29.00
150 3 color, 25 pour pt.	23.50 –24.00	23.50 –24.00	23.50 –24.00
600 Warren E filtered	20.00	20.00	20.00
600 stm. refd. unfiltered	16.50	16.50	16.50
650 stm. rfd. unfiltered	18.00	18.00	18.00
600 flash, steam refined	19.00	19.00	19.00
630 flash, steam refined	24.00	24.00	24.00

Wax Domestic *and* Export

(Prices in cents per pound. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk).

	New York		New Orleans	
Prices—June 24	*Domestic*	*Export*	*Domestic*	*Export*
124-6 Y.C. scale	2.00 – 2.10	2.00 – 2.10	2.00 – 2.10	2.00 – 2.10
122-4 W.C. scale	2.00 – 2.125	2.00 – 2.125	2.00 – 2.125	2.00 – 2.125
124-6 W.C. scale	2.00 – 2.15	2.00 – 2.15	2.00 – 2.15	2.00 – 2.15
123-5 Fully refined	4.20	3.625– 3.75	4.20	3.625– 3.75
125-7 Fully refined	4.30	3.75 – 4.00	4.30	3.75 – 4.00
128-30 Fully refined	4.55	4.00 – 4.25	4.55	4.00 – 4.25
130-2 Fully refined	4.80	4.25 – 4.50	4.80	4.25 – 4.50
133-5 Fully refined	5.30	4.75 – 5.00	5.30	4.75 – 5.00
135-7 Fully refined	5.55	5.00 – 5.25	....	....

Gulf Coast

(Prices are f.o.b. Gulf oil terminals representing sellers' opinions except prices specified to the contrary. Prices cover bulk shipments of 20,000 barrels or more, unless otherwise noted.)

Motor Gasoline

For Domestic Shipment

Prices—	June 24	June 17	June 10
59 octane and below	5.25	5.25	5.25
60-64 octane number	5.375	5.375	5.375
65 octane and above	5.50	5.50	5.50

Fuel Oils

No. 1 Fuel oil	3.875– 4.00	4.00 – 4.25	4.00 – 4.25
No. 2 Fuel oil	3.25	3.25	3.25
No. 4 Fuel oil	2.875– 3.00	2.875– 3.00	2.875– 3.00

Kerosine

41-43 w.w.	3.875– 4.00	4.00 – 4.25	4.00 – 4.25

Gasoline

For Export Shipment

U. S. Motor gasoline	5.00 – 5.125	5.125	5.125
60-62, 400 e.p. gasoline	5.00 – 5.125	5.125	5.125
61-63, 390 e.p. gasoline	5.125– 5.25	5.25	5.25
64-66, 375 e.p. gasoline	5.25 – 5.375	5.375	5.375
U. S. Motor, cases (cargoes)	$1.20 –$1.25	$1.20 –$1.25	$1.20 –$1.25
64-66, 375 e.p. cases (cargoes)	$1.25 –$1.30	$1.25 –$1.30	$1.25 –$1.30

Kerosine

44 water white	4.25	4.25 – 4.50	4.25 – 4.50
41-43 water white	3.875– 4.00	4.00 – 4.25	4.00 – 4.25
41-43 prime white	3.875	3.875– 4.125	3.875– 4.125
W.W., cases (cargoes)	$1.15 –$1.20	$1.15 –$1.20	$1.15 –$1.20
P.W., cases (cargoes)	$1.10 –$1.15	$1.10 –$1.15	$1.10 –$1.15

Gas and Bunker Oils

For Domestic and/or Export Shipment

*26-30 translucent gas oil	2.875– 3.00	2.875– 3.00	2.875– 3.00
*30 plus translucent gas oil	3.125	3.125	3.125
30 plus transp. gas oil	3.125– 3.25	3.125– 3.25	3.125– 3.25
Diesel Oil Ships' bunkers	†$1.50	†$1.50	†$1.70
Grade C bunker oil, for ships' bunkers, per bbl.	†$1.00	†$1.00	†$1.00
Grade C bunker oil, per bbl. in cargoes	$0.80	$0.80	$0.80

*Less than ½ of 1% sulphur. †Lighterage 5c per bbl. additional.

(*Continued on next page*)

Seaboard Markets, Export *and* Coastwise

Where $ mark is shown, prices are per barrel of 42 U. S. gallons. ***Prices Do Not Include Federal Tax***

(Continued from page 116)

Mexican Crude and Bunker Oils

(F.o.b. Steamer, Tampico)

Prices—	June 24	June 17	June 10
Heavy Panuco crude taxes to be paid, per bbl.....	$1.00 –$1.03	$1.00 –$1.03	$1.00 –$1.03
Grade C bunker oil, ships' bunkers, taxes paid, per bbl.....	$1.00	$1.00	$1.00

Mid-Continent Lubricating Oils

(Prices in cents per gallon in bbls. f.a.s. Gulf terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)

190-200 vis. D 210 brt. stk.	23.00 –23.50	23.00 –23.50	22.50 –23.50
150-160 vis. D 210 brt. stk.:			
0-10 pour point.....	20.00 –20.50	20.00 –20.50	19.50 –20.50
10-25 pour point.....	20.00 –20.50	20.00 –20.50	20.00 –20.50
25-40 pour point.....	19.00 –19.50	19.00 –19.50	19.00 –19.50
150-160 vis. E 210 brt. stk.	19.00 –19.50	19.00 –19.50	19.00 –19.50
120 vis. D 210 bright stock	19.25 –19.75	19.25 –19.75	19.25 –19.75
180 vis. No. 3 color neutral oil:			
0-10 pour point.....	17.25 –17.50	17.25 –17.50	17.25 –17.50
15-30 pour point.....	16.25 –16.75	16.25 –16.75	16.25 –16.75
200 vis. No. 3 color neutral oil:			
0-10 pour point.....	17.75 –18.25	17.75 –18.25	17.75 –18.25
15-30 pour point.....	16.75 –17.25	16.75 –17.25	16.75 –17.25
600 s.r. olive green.....	12.00 –12.50	12.00 –12.50	12.00 –12.50
600 s.r. dark green.....	9.50 –10.50	9.50 –10.50	9.50 –10.50
631 s.r.....	14.00 –14.50	14.00 –14.50	14.00 –14.50

South Texas Lubricating Oils

(Viscosity at 100° F. cold test 0. Tanker, f.o.b. Gulf oil terminals, for export shipment)

Unfiltered Pale Oils:

Vis. Color			
100 No. 3.....	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00
200 No. 3.....	6.375– 7.00	6.375– 7.00	6.375– 7.00

South Texas Lubricating Oils (cont'd)

Unfiltered Pales (cont'd)

Prices—	June 24	June 17	June 10
300 No. 3.....	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
500 No. 3½.....	7.875– 8.50	7.875– 8.50	7.875– 8.50
750 No. 4.....	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
1200 No. 4.....	9.50 –10.00	9.50 –10.00	9.50 –10.00
2000 No. 4.....	9.75 –10.25	9.75 –10.25	9.75 –10.25

Red Oils:

Vis. Color			
100 No. 5-6.....	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00
200 No. 5-6.....	6.125– 6.75	6.125– 6.75	6.125– 6.75
300 No. 5-6.....	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
500 No. 5-6.....	7.875– 8.50	7.875– 8.50	7.875– 8.50
750 No. 5-6.....	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
1200 No. 5-6.....	9.50 –10.00	9.50 –10.00	9.50 –10.00
2000 No. 5-6.....	9.75 –10.25	9.75 –10.25	9.75 –10.25

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shipments per ton of 2240 pounds, British sterling: to U. S. ports, cents per barrel)

	Crude &/or Fuel		Refined Oil &/or Spirits	
Rates—June 24	Last Paid	Owners Ask	Last Paid	Owners Ask
Calif.U.K./Continent*...	17/3	18/-18/6	15/	15/
Gulf-U.K./Continent*...	10/6	11/-11/6	11/9	12/-12/6
Calif.-N. Atlantic..... (not E. of N. Y.)	59c	55-60c	59c	50-52c
Gulf-N. Atlantic**..... (not E. of N. Y.)	†15c	†16-17c	15c	16-17c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

*Continental ports in range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate: Tampico 2c to 3c per bbl. additional.

†Rates for heavy crude or fuel 1c to 2c higher than for light crude.

S. S. Posting in Iowa Dropped

CHICAGO, June 25.—With major companies withdrawing from retailing in Iowa July 1, on account of the tax on chain stores and chain store gross receipts, Standard Oil Co. of Indiana will not post service station prices in Iowa after that date. Postings will be made on tank wagon and dealer prices only.

New Equipment Manager

MINOT, N. D.—Herb Haeft is the new manager of the equipment and construction department of the Westland Oil Co.

Dott Heads Oklahoma Geological Survey

TULSA, June 22.—Robert H. Dott, Tulsa geologist, has been appointed director of the Oklahoma Geological Survey. That bureau has been inactive for two years, ex-Governor Murray having vetoed its appropriation.

Mr. Dott, a graduate of the University of Michigan in 1917, has had much experience in field work. He began with the Empire Gas & Fuel Co. in 1917, working in Oklahoma, Kansas and Texas. From 1920 to 1922 he was in Bolivia and Argentina for the Standard Oil Co. of New Jersey and, upon his return to the U. S., he went with the Carter Oil Co.

In 1926 he entered the service of the Mid-Continent Petroleum Corp. and in 1929 became chief geologist of the Sunray Oil Co. He has been in consulting work since 1931. He is vice-president and treasurer of the Aero Exploration Co., Tulsa.

Offices of the state survey are in Norman, seat of the University of Oklahoma.

To Improve Radio Station

WOLF POINT, Montana—The Westland Oil Co. radio station KGCX at Wolf Point is to be improved at an estimated cost of $10,000. Transmitting power is to be increased from 250 to 1000 watts, time on the air is to be over 12 hours daily, and a new transmitter building and antenna are to be erected.

Robert H. Dott

Accident Rate Lowest For Oil's Trucks

CLEVELAND, June 25.—Trucks operated by the oil industry travel a greater number of miles, with fewer accidents, than those operated by other commercial fleet operators, a tabulation of accidents reveals as compiled by the National Safety Council, Chicago.

Oil industry trucks are involved in less than two accidents per 100,000 miles traveled, compared with approximately three accidents for the same mileage for all commercial trucks.

The second lowest acident rate is 2.09 per 100,000 miles for inter-city trucking. The groups with the highest accident rate are newspapers, with 6.50 and fuel delivery trucks, with a rate of 6.95. Oil industry trucks have a rate of 1.99.

Public utility trucks, which travel the second highest number of miles, or 128,651, compared with 150,434 miles by petroleum trucks, have an accident rate of 2.77. This industry operates the highest number of trucks, or 12,130, compared to the second highest operated by the oil industry, or 10,208 trucks.

If FIRE strikes here . .

LUX

STANDS READY

More than that, your husky LUX Extinguisher will handle fire in *whatever* form it strikes. For LUX is no one-punch fighter. It delivers a devastating wallop against every type of oil-plant fire, which may threaten destruction to your equipment.

Safety Engineers specify LUX extinguishers to protect such widely varied risks as those involving the handling of heavy oils, or gas, or low-flash-point-oils. In every case LUX snuffs out the blaze instantly, whether a running-oil fire or burning vapor. LUX carbon-dioxide gas spreads 3-dimensionally and kills fire at all levels. If the hazard is intensified by electrical equipment, remember that LUX gas is a non-conductor. It expands into every crevice. Being clean and dry LUX does no damage to expensive equipment, leaves no residue.

Recent improvements in LUX extinguishing equipment have made other extinguishers obsolete for certain hazards. For full information, phone our local representative or write to **Walter Kidde & Co., Inc.,** 67 West Street, Bloomfield, N. J.

Effective Fire Protection For The Oil Industry

New Patents

Prepared by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 25c each. State number of patent and name of inventor when ordering.

June 4, 1935

REFINING

Process for catalytic conversion of hydrocarbons—Waldemar O. Mitscherling, Bridgeport, Conn., assignor to Neon Research of Connecticut, Inc., same place. Filed Nov. 27, 1931. No. 2,003,303.

Method and apparatus for distillation—John Lerl, Los Angeles, Calif. Filed Oct. 26, 1929. No. 2,003,306.

Cracking hydrocarbon oils—Jacob B. Heid, Chicago, Ill., assignor to Universal Oil Products Co. Filed Nov. 26, 1930, and Dec. 18, 1931. Nos. 2,003,536 and 2,003,537.

Filtration of wax from oil—Francis X. Govers, Vincennes, Ind., assignor to Indian Refining Co. Filed Jan. 11, 1932. No. 2,003,664.

Dewaxing hydrocarbon oil—Ernest F. Peverc, Beacon, N. Y., assignor to Texas Co. Filed Nov. 3, 1933. No. 2,003,667.

Apparatus for treatment of hydrocarbon oils—Willis F. Sims and Venus U. Cloer, Wichita Falls, Tex., assignors to Panhandle Refining Co. Filed Mar. 4, 1931. No. 2,003,724.

Treatment of hydrocarbon oils—William M. Stratford, New York, N. Y., assignor to Texas Co. Filed Feb. 12, 1931. No. 2,003,776.

Treatment of hydrocarbons—Waldemar O. Mitscherling, assignor to Neon Research of Conn. Filed Apr. 28, 1931. No. 2,003,898.

MISCELLANEOUS

Lubricant (metal drawing)—Alfred H. Kelling, Chicago, Ill., assignor to International Patents Development Co. Filed Jan. 10, 1934. No. 2,003,368.

Graphite lubricant — William C. Thorpe, Toronto, Ont., Canada. Filed June 2, 1932. No. 2,003,564.

June 11, 1935

REFINING

Treatment of hydrocarbons—Charles L. Thompson, Thomas S. Bacon, and Joseph E. Bludworth, Eastland, Tex., assignors to Hanlon-Buchanan, Inc. Filed July 23, 1931. No. 2,004,714.

Method of treating hydrocarbons—Max E. Bretschger, Buffalo, N. Y., and Ernest A. Bosing, Long Beach, Calif., assignors to Buffalo Electro-Chemical Co. Filed Mar. 21, 1932. No. 2,004,849.

The following to Universal Oil Products Co. as assignee of the inventors:

Process for treating petroleum oil—Carbon P. Dubbs, Wilmette, Ill. Filed July 21, 1922. No. 2,004,196.

Method of producing asphalt—Jacque C. Morrell, Chicago, Ill. Filed Nov. 25, 1929. No. 2,004,210.

Oil-cracking apparatus—Frederic M. Pyzel, Piedmont, Calif. Filed Aug. 11, 1928. No. 2,004,217.

Process for conversion or cracking of high boiling hydrocarbon oils into low boiling hydrocarbon oils—Jean D. Seguy, Chicago, Ill. Filed July 24, 1930. No. 2,004,223.

MISCELLANEOUS

Hydrocarbon oil and method of making—Herbert G. M. Fisher, Westfield, and Clifford E. Gustafson, Elizabeth, N. J., assignors to Standard Oil Development Co. Filed Sept. 21, 1928. No. 2,004,094.

Spout for hose-nozzle—James W. Howell, Chickasha, Okla. Filed Mar. 25, 1935. No. 2,004,203.

Motor fuel products—Robert E. Wilson, Chicago, Ill., assignor to Gasoline Antioxidant Co. Filed Sept. 18, 1931. No. 2,004,560.

Method of cleaning filter-screens—Elmer H. Payne, Wood River, Ill., assignor to Standard Oil Co. (Ind.). Filed Dec. 14, 1933. No. 2,004,796.

June 18, 1935

REFINING

Method of dewaxing oils—James W. Weir, Los Angeles, Calif., assignor to Texas Co. Filed July 26, 1928. No. 2,005,062.

Distillation of tar—Stuart P. Miller, Englewood, N. J., assignor to Barrett Co. Filed May 21, 1931. No. 2,005,102.

Conversion process — Vandeveer Voorhees, Hammond, Ind., assignor to Standard Oil Co. (Ind.). Filed Feb. 14, 1930. No. 2,005,118.

Conversion of solid fuel and product derived therefrom or other materials into valuable liquids—Carl Krauch and Mathias Pier, Germany, assignors to Standard-I. G. Co. Filed July 29, 1932. No. 2,005,192.

Manufacture of motor fuel from sludge oil—George Armistead, Jr., Lockport, Ill., and Walter Ullrich, Port Arthur, Tex., assignors to Texas Co. Filed July 8, 1931. No. 2,005,309.

Apparatus for fractionating hydrocarbon oil vapor—Frank W. Hall, Port Arthur, Tex., assignor to Texas Co. Filed June 15, 1932. No. 2,006,316.

Distilling and fractionating apparatus—Wallace A. McMillan, Beacon, N. Y., assignor to Texas Co. Filed Jan. 13, 1934. No. 2,005,323.

Refining of hydrocarbons—Leo D. Jones, Philadelphia, and Edward M. James, Moylan, Pa., assignors to Sharples Specialty Co. Filed Mar. 5, 1931. No. 2,005,342.

Treatment of hydrocarbon oils—Joseph G. Alther, Chicago, Ill., assignor to Universal Oil Products Co. Filed Dec. 19, 1931. No. 2,005,527.

Process for cracking hydrocarbon oils—Frank W. Hall and Harris A. Smith, Port Arthur, Tex., assignors to Texas Co. Filed Apr. 27, 1931. No. 2,005,675.

MISCELLANEOUS

Light for gasoline-dispensing nozzles—Straud K. Wood, Ben L. Eales, and Leo V. De Witt, Hutchinson, Kans. Filed Oct. 16, 1933. No. 2,005,251.

College Buys Lube Testing Machine

STATE COLLEGE, Pa., June 21.—Within the next few weeks an extreme pressure lubricants testing machine will be purchased by Pennsylvania State College for use in its mechanical engineering laboratory. Increasing interest in this type of lubricant moved the directors of the Pennsylvania Grade Crude Oil Association, through its technical advisory committee, to authorize purchase of this machine.

The machines were made available by the Society of Automotive Engineers. It is understood that 20 machines will be sold to organizations outside of the society, and the buyers will engage in a co-operative research program. Results of tests made will be compared and exchanged to effect a recognized standard procedure.

Prof. H. A. Everett is in charge of the mechanical engineering laboratory at State College.

Continental Road Bureau Gathers Flood News

TULSA, June 22.—For thousands of motorists the uncertainty was taken out of highway travel in flooded areas of Oklahoma, Missouri, Arkansas and Kansas this week through establishment of an emergency highway information service by the Continental Oil Co.'s marketing department.

At the company's marketing offices in 11 cities, employes answered the almost constantly ringing phones from early in the morning until late at night, giving inquiring motorists the latest information on condition of highways. These calls poured in at an average rate of 35 an hour.

In between calls these employes checked by long distance phone with Tulsa, which had been designated as the clearing house, with Marshall Dana, city manager, in charge. From these 11 cities Dana obtained information almost hourly; from the company's agents in smaller towns and from bus lines and motor transport drivers, he learned all he could about the highways. Before him were spread large maps of the area, and on these he kept an accurate record of highway conditions. From these maps he kept other offices of the company informed almost hourly.

It made no difference what highway in the flooded area the motorist inquired about, he could get the latest information as to whether it was "open" or "closed." Every one of the offices knew about all the highways in the area.

This emergency service was established shortly after newspapers carried a story stating the Tulsa office of the Auto Club of Oklahoma, an affiliate of the A.A.A., would give information over the phone only to its members; that non-members would have to come down to the office and get the information "over the counter."

The next editions of the newspapers in Tulsa, and within a short time in other cities in the flooded area, carried stories that Continental had established this service, and welcomed phone calls. In most instances the company's phone numbers were listed, together with the employes who would "be glad" to give the latest information about the highways.

Mrs. H. P. Dunn Dies

CHICAGO—Mrs. H. P. Dunn, 35, wife of Harry P. Dunn, head of a lubricating oil marketing concern bearing his name, was found dead in their home here early June 20. Death was caused by heart trouble.

KELLY PETILLO
Winner, 1935 Indianapolis 500-mile auto sweepstakes, with new world record of 106 miles per hour.

PYROIL *Scores* AGAIN

8 OUT OF 10 WINNERS IN INDIANAPOLIS 500 MILE RACE PROTECT CARS WITH THIS FAMOUS LUBRICATION PROCESS

For the third consecutive year—1933, 1934, 1935—a new world's record has been established in the Indianapolis 500-mile auto race. Each year, Pyroil has been used by the winner and by a majority of the runners-up, with each driver generous in his praise of Pyroil's efficiency.

Whenever successful motor performance is achieved only by faultless mechanical operation, Pyroil is generally called into use to do its part in safeguarding vital motor mechanisms. When you service Pyroil to your patrons you can be sure they will come back for more. This famous lubrication process has the enviable reputation of gaining the good will, recommendation and complete satisfaction of users—the world over. Not only pays you its own profit but boosts sales of companion products and brings in new trade as well.

A few ounces of Pyroil added to the regular oil, grease and gasoline which you dispense, soon establish a friction-defeating, wear-reducing sheath of protection upon all frictional surfaces of your customers' motors—pistons, cylinders, rings, valves, bearings and gears. Constantly shields the metal against excessive heating, scoring and other damage, especially in common emergencies of oil thinning or loss. Smooths operation. Increases power. Saves repairs.

NOTE: Pyroil is Highly Efficient in Safeguarding Alloy Bearings, All Types. Contains No Harmful Oils or Acids.

Ask the local Pyroil Distributor (see 'phone book) to fully explain the Pyroil process of protective lubrication—or mail coupon. Then *merchandise* Pyroil, (it's nationally advertised in Saturday Evening Post, Country Gentleman, Time, Fortune, Christian Science Monitor and many other leading publications)—and watch new faces drive in, transient business pick up. One trial proves. Manufactured and Guaranteed by Pyroil Company, W. V. Kidder, Pres., 739 LaFollette Ave., LaCrosse, Wis., U. S. A.

GENUINE PYROIL *is protected by U. S., Canadian and foreign patents issued to W. V. Kidder, its inventor. Not sold under any other name. Look for this signature on every can.*

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739 LaFollette Ave.,
LaCrosse, Wis., U. S. A.
Please send further facts of Pyroil and its business and profit building ability. No obligation.

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Address.....
City..... State.....

Third Grade Prices Still Subnormal in Atlanta

ATLANTA—Retail prices for third grade gasoline have been 3 to 5 cents below those for regular grade gasoline in Atlanta, Ga. for the past three months as a result of a war between some four or five track-side and cut-price operators and major oil companies.

Little attempt has been made recently to meet the cut-price competition except with third grade gasoline. Early in the year the competition was met by reductions in both regular and third grade gasoline prices, a 2-cent differential being maintained between the two.

In April, however, the regular grade price held fairly steady while the third grade price began moving downward. As of June 17, the differential between regular and third grade was 5 cents.

The situation apparently has been aggravated somewhat by antagonism within the ranks of the cut-price operators.

Some of the independent distributors in Atlanta have sought to lay the blame entirely on the major companies, charging them with a deliberate attempt to drive the independents out of business. This charge even has been made on two occasions to the Federal Trade Commission, but that body, so far, has taken no official action.

The major companies point to the retail price record of the past few months to prove those charges are false. On more than one occasion, it has been pointed out, retail prices have been advanced by major companies and those advances remained in effect for some time despite the fact the operators now making the charges against them failed to move their posted prices upward.

And while the war has been going on, some of the track-side and cut-price operators as well as other independents have been obtaining a sizable portion of their gasoline right along from major companies.

The charge also has been made that some of the major companies have cancelled commission agreements. That apparently is true in some instances, "But why," asked the official of one of the major independents in Atlanta, "should we sell our gasoline to certain individuals, only to have them use that gasoline to break down the retail price structure?"

Thoroughbred Quality

Cannonball Service

ONLY CUSHING CAN GIVE YOU BOTH!

For years Cushing petroleum products have been looked upon as the highest standard of quality—*Thoroughbreds!* For years Cushing has been serving its customers these products with *Cannonball Service.* Now with its new plant recently completed, Cushing at a cost of thousands of dollars has brought you a new gasoline—high octane, anti-knock and safe for motors and anyone to handle—because it's a pure undoped product that we guarantee and you can offer your customers without doubt or fear. Cash in on the money maker of 1935 — *Cushing has it!*

Cannonball Service

WIRE, WRITE OR PHONE FOR QUOTATIONS

Anti-Knock 400 End Point
60-62 Better than U. S. Motor
60-62 Under 400 End Point
64-66 Under 375 End Point
68-70 Under 360 End Point
42-44 W. W. D. T. Kerosene
38-40 Light Straw Zero Distillate
32-36 Overhead uncracked Gas Oil
Straight Reduced also Cracked Fuel Oil

Partial view of small storage tank section of the new Cushing plant, loading racks and crude plant in the background.

Cushing

REFINING & GASOLINE COMPANY

General Sales Offices: CUSHING, OKLA.
Division Sales Offices: 2007 Foshay Tower Minneapolis, Minn.
REFINERIES: CUSHING and BLACKWELL, OKLAHOMA

Tax Refunds More Liberal As Ohio Revises Law

COLUMBUS, O., June 21.—Refunds from the state tax commission for losses of not less than 50 gallons, incurred through any cause other than evaporation, shrinkage or similar causes, may be secured by any person, whether or not a licensed dealer, as a result of amendments enacted by the Ohio General Assembly to the state gasoline tax law and liquid fuel tax law, it is announced by the Ohio Petroleum Marketers Association. The law becomes effective Sept. 3.

Refunds, therefore, may be secured not merely for losses through accident, but also through carelessness of employes, such, for example, as failure to close a valve on a tank wagon being unloaded. Up to this time applications for refunds for causes other than theft, leakage, fire or explosion have not been considered.

Notice of loss must be given to the tax commission within 10 days and within 60 days an affidavit must be filed setting forth in full the circumstances of the loss.

Opens New Station

MINOT, N. D.—The Westland Oil Co. has opened a new service station at Poplar, Mont. Clarence Hanson is the manager.

Special Train Planned For API Convention

CLEVELAND, June 20.—A deck of cards, a bathing suit and a tireless physique to withstand all that is planned for the special train carrying delegates to the 16th annual convention of the American Petroleum Institute in Los Angeles, Nov. 11 to 14, will pull you through with the help of several scenic-routed railroads and some aspirin, and provided you had plenty of sleep before you started.

Here are only a few high spots in an ambitious program offered by the railroads for the trip by the A.P.I. Special; a side trip to Boulder Dam, a trip to the Royal Gorge; visits to deep, cool canyons; stops for better views of mountain peaks, a motor trip around Salt Lake City; Mormon Temple organ recital, and time off for a refreshing plunge into one of the world's largest outdoor natural hot-water swimming pools at Glenwood Springs. A reception by the Governor of Utah will send the party off on the picturesque Mormon Trail into Los Angeles.

The train will be equipped not only with the latest mechanical devices but with a crew that sings and entertains as well as makes up berths. It will have an observation lounge car and a baggage car completely outfitted for recreation such as bridge, games, motion pictures and so on.

The special leaves New York Nov. 5 via the Pennsylvania, picks up east coast men at various points, changes to the Missouri Pacific at St. Louis, to the D. & R. G. at Royal Gorge, and to the Union Pacific at Salt Lake City.

Richard Wotowitch, Warner-Quinlan Co., New York, is engineering the transportation and asks oil men for approximate reservations.

Coming Meetings

(*Continued from page 9*)

Independent Petroleum Assn. of America, Adolphus and Baker Hotels, Dallas, Tex., Nov. 4, 5.

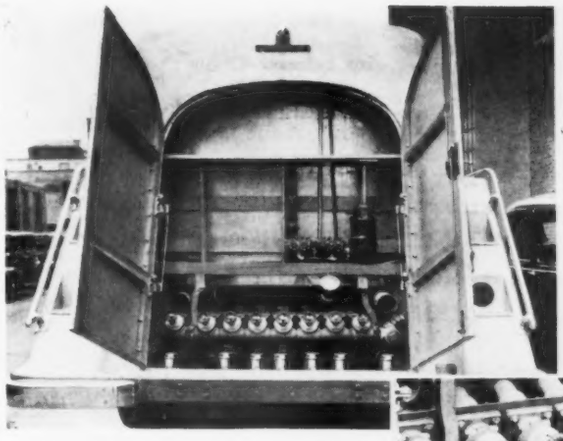
American Petroleum Institute, 16th annual meeting, Biltmore Hotel, Los Angeles, Cal., Nov. 11 to 14.

California Natural Gasoline Assn., Los Angeles, Calif., some time in November.

American Institute of Chemical Engineers, Columbus, Ohio, some time in November.

'MILWAUKEE' ENGINEERED

TRUCK TANK VALVES CUT CORNERS IN COSTS

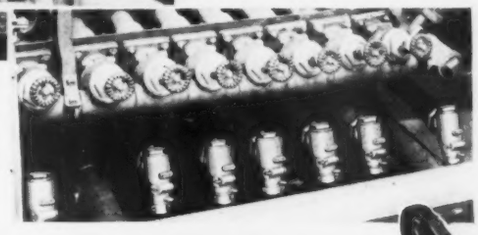


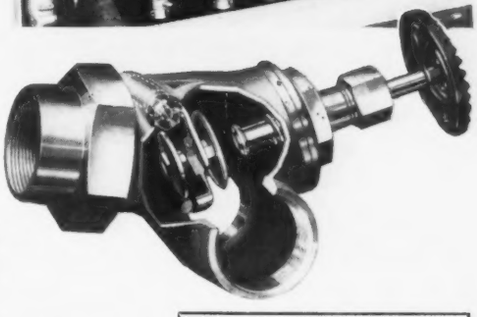
Higher operating efficiency, lower maintenance and ease of installation are factors which effect material savings both in manufacture and operation of "Milwaukee" equipped Truck Tanks.

During the past few years "Milwaukee" engineers have developed many important improvements in valve design which have earned the recognition and approval of the oil industry's leading engineers.

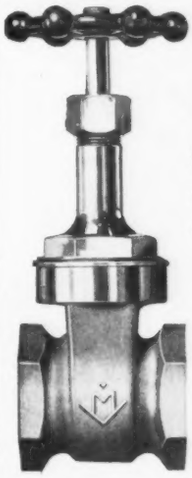
Above shows a rear view of a Tank Truck completely equipped with "Milwaukee" No. 526 Combination Stop and Check Valves and "Milwaukee" No. 851 Truck Tank Faucets.

Right is a close-up of the manifold assembly.





GATE VALVE
No. 406—Rising Stem



COMBINATION STOP & CHECK VALVE
No. 526 with Female Union Nut Inlet and Female outlets.
No. 525 with Flanged Inlet
No. 524 with all connections Flanged

"MILWAUKEE" PERMADISC CONSTRUCTION

An exclusive "Milwaukee" Engineering development embodied in the Combination Stop and Check, Truck Tank Faucet and other "Milwaukee" Valves.

The "Permilene" disc is encased in Disc Holder which prevents distortion and insures longer, more dependable service.

TRUCK TANK FAUCET
No. 851 with locking Safety Cap
No. 846 with locking Safety Cap and Handle.

Send for copy of current illustrated Price List.

MILWAUKEE VALVE COMPANY
MILWAUKEE Manufacturers of WISCONSIN
"MILWAUKEE" Valves and Fittings for the Oil Industry

At 3 Cents Per Day!

HERE'S how one oil man saves himself time, money and temper.

"Every time I'd go to look for a back price, invariably that issue of National Petroleum News was missing from our files. *Now* all I have to do is to reach for the OIL PRICE HANDBOOK and I have the 1934 price of any refinery, tank wagon, Chicago tank car, export, seaboard and crude market . . . in a jiffy.

"It saves me time, money and temper."

This "saving of time" is a big item. Stop for a moment to figure out the saving if every man in your organization who refers to back prices had an OIL PRICE HANDBOOK at his elbow. He wouldn't even have to get up from his chair to get any 1934 price he needed.

In a year's time, if he looked up only one price a day in the OIL PRICE HANDBOOK, it would cost you about *3 cents per day*.

Compare this with your present cost of recording and referring to back prices on Refinery, Tankwagon, Chicago Tank Car, Export, Seaboard and Crude Markets!

How many men in your organization should have a copy of the 1934 OIL PRICE HANDBOOK at their elbow? Special rates in quantity. Send your order in promptly before the supply of this price-book is exhausted.

— — — — — — — — *clip and mail* — — — — — — — —

NATIONAL PETROLEUM NEWS
Penton Bldg., Cleveland, Ohio

Send.....copies of the 1934 OIL PRICE HANDBOOK and Refinery Directory. Single copy $10 postpaid.

(On order of 5 copies special discount of 5%; 10 or more copies 10% discount; 50 or more copies 20%, payable in advance.)

NAME.....

Address.....

.....

Pennsylvania Increases Tax Rate to 4 Cents

HARRISBURG, June 24.—Motorists in Pennsylvania will pay the state 4 cents a gallon tax on gasoline beginning July 1. H. B. 1318, which increases the state tax rate from 3 cents to 4 cents a gallon, was signed late June 22 by Gov. Earle.

No official announcements have been made as yet, but it is understood that oil companies will increase their gasoline prices 1 cent throughout the state July 1 to cover the increase in tax.

The increased tax, it is estimated, will cost Pennsylvania motorists an additional $10,000,000 a year. Present plans call for the use of this money for relief during the next 12 months. After that date it will be used to defray general administrative expenses of the state.

163-Mile Gas Pipeline Contract Awarded

TULSA, June 22. — Williams Brothers, Tulsa pipeline contracting firm, has been awarded contract to lay 163 miles of gas line for the North Central Gas Co. between Clayton, Wyo. and Bridgeport, Neb. The line will be used in place of that section of Stanolind Pipe Line Co.'s system from Teapot Dome and Salt Creek to Freeman, Mo.

Stanolind some time ago notified the gas company it would require its line again for the movement of stored crude oil from Wyoming. Stanolind Crude Oil Purchasing Co. has about 12 million barrels of oil in its Clayton tank farm, stored during the flush production days of Salt Creek.

Work on the new gas line will start about August 1.

Intrastate Rail Rates Cut in Nebraska

LINCOLN, Neb., June 22.—Competition between the railroads and trucks on hauling gasoline from the Nebraska terminal of the new Champlin Refining Co. gasoline pipeline began this week with reduction of about 50 per cent in intrastate gasoline freight rates from the Superior gateway.

The new rates entered this week by the Nebraska railway commission do not alter the interstate schedules in Nebraska. Group 2 and 3 rates to destination are still considerably lower than the interstate rate to Superior plus the intrastate rates from Superior to destination.

The former rate from Superior to Lincoln was 30 cents a hundred, compared to the new 16-cent rate. The

Group 3 rate to Lincoln is 34 cents a hundred, the same as to Superior.

All railroads in Nebraska joined in asking for the new rates, which are 7 to 59 cents a hundred.

Superior, near the Kansas border below Lincoln, is the southern freight gateway, and also it will be the terminal of the Champlin gasoline pipeline. Three railroads, the Missouri Pacific, Burlington, and Chicago & Northwestern, operate at Superior.

Gasoline Tax Yields 11% Less, First 5 Months

WASHINGTON, June 22.—Federal tax collections on gasoline the first five months of this year totaled $59,849,318, compared with $67,590,771 for the same period last year, a decrease of $7,742,453 or 11.4 per cent, according to the U. S. Bureau of Internal Revenue. Collections in the first five months of 1933 were $51,159,846, the tax being 1 cent per gallon in all three periods.

The federal tax of 4 cents per gallon on lubricating oils yielded $11,411,269 in the first five months of this year, compared with $9,380,365 in the corresponding period of 1934, and $7,029,363 in 1933.

Other taxes paid to the federal government by the oil industry in the first five months of 1935 and 1934, respectively, were: Pipelines, $3,621,543 and $4,047,951; crude oil, tax withheld by purchaser, $225,067; producers' tax, $140,321; refiners' tax, $373,270; and tax on gasoline produced from natural gas, $57,953.

Chicago Oil Men Golf

CHICAGO, June 22.—The annual spring golf outing and dinner of the Chicago Oil Men's Club at Medinah Country Club June 20, was a complete success with more than 140 members and guests present.

A score of 80 for the 18 holes by T. H. Murphy, Industrial Petroleum Co., was low for members, with M. H. Suffield, Illinois Central Railroad, low among guests with 79.

Other prize winners were Fred Plane and Henry Plane, Johnson Oil Refining Co.; H. Jensen, Spencer Petroleum Co.; W. L. Henry, Valvoline Oil Co.; M. Keim, Apex Motor Fuel Co.; R. J. Kelly, Deep Rock Oil Corp.; A. Henrickson, Russian Oil Co.; G. B. Williams, Williams Oil Co.; H. Lightstone, Kanotex Refining Co., Charles Prince, Pure Oil Products Co.; Charles Ephgrave, Carson Petroleum Co.; L. D. McGuan, NATIONAL PETROLEUM NEWS, and Karl Holdefer, Commerce Petroleum Co., members.

Guest winners were J. H. Collins, G. Roll, H. E. Echland, Mr. Swanson, E. Miller, C. Braun, Mr. Rubek, C. Kelly, C. Henderson, E. R. Bick, I. G. Heartt, R. Lake and T. J. Galligan.

This Picture Tells MORE THAN WORDS

Quality AND Low First-Cost are united in "Twin-Bolt" Gate Valves

You wouldn't guess that this Spindle and Wedge came from one of the low-priced Jenkins "Twin-Bolt" Iron Body Gate Valves. The precision-machining, flawlessness of casting and deep color that indicates superior bronze are worthy of valves in the high-price class.

Intended for services where low first-cost is an essential, Jenkins Twin-Bolt Gates are not "fancy" valves. But in all of the vital operating parts you'll find unexpected quality and craftsmanship. Combined with all-around ruggedness, simplicity and correct design, it assures an extra-measure of service.

JENKINS BROS., 80 White Street, New York, N. Y.; 510 Main Street, Bridgeport, Conn.; 524 Atlantic Ave., Boston, Mass.; 133 N. Seventh Street, Philadelphia, Pa.; 822 Washington Boulevard, Chicago, Ill.; JENKINS BROS., Limited, Montreal, Canada; London, England

ADDITIONAL FEATURES *of the Twin-Bolt Gate are covered in Folder 159. Write, or ask your supply house for a copy and prices.*

REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros

BRONZE MTD—ALL IRON SIZES TO 4 INCH

Jenkins Valves

BRONZE—IRON—STEEL SINCE 1864

Transactions in Oil Stocks on New York Stock Exchange

1934 High	1934 Low	1935 High	1935 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended June 22 Sales Shares	High	Low	Last	Week's Change
55⅝	39	70¾	48½	922,070	N.P.	Amerada Corp.	50cQ	Jan. 31, 35	5,400	70	67¾	69	0
40½	29½	38	29¾	2,290,412	$25	Associated Oil Co.	45c	June 25, 35	10	36	36	36	0
35¼	21½	28	21⅜	2,696,652	25	Atlantic Refining Co.	25cQ	June 15, 35	10,500	27⅛	25¼	26⅝	— ⅝
10	5⅞	10⅝	5⅞	2,258,779	5	Barnsdall Corp.	....	May 11, 31	6,300	9	8⅜	8¾	— ⅛
9¾	5	7½	6¾	1,444,970	N.P.	Colonial Beacon Oil Co.	....	.....	70	7	6¾	7	0
14¼	7¼	10½	6½	14,218,835	N.P.	Consolidated Oil Corp.	14c	Oct. 31, 34	25,700	9⅛	8¾	9	— ⅛
112½	108	112	109	132,771	$100	do pfd.	$2Q	May 15, 35	100	110¼	110¼	110¼	+ ¼
22¾	15¾	23	15⅛	4,722,652	5	Continental Oil Co.	12½c	Apr. 30, 35	19,800	21⅞	20¾	21⅞	+ ⅜
23½	12	18⅞	11¾	413,333	$10	General Asphalt Co.	....	June 15, 32	3,000	18	16¾	17½	— ½
29¾	12½	17¾	9½	95,841	100	Houston Oil Co.	....	.....	500	15	14	15	+ ¾
5⅝	2½	3⅜	1½	678,234	25	do v.t.c.	....	Feb. 1, 32	700	2⅜	2⅜	2⅜	0
4¾	2¾	2¾	2⅛	1,207,132	10	Indian Refining Co.	....	Dec. 15, 20	100	2½	2½	2½	— ¼
3⅜	¾	1⅞	⅜	1,309,060	N.P.	Louisiana Oil Ref'g. Corp.	....	.....	9,400	¾	½	½	— ⅛
23½	7¼	14½	4½	40,000	$100	do pfd.	....	May 16, 32	460	7½	†4½	4⅞	— 3⅛
3¼	1⅛	4¾	1	330,000	N.P.	Maracaibo Oil Exploration Co.	....	.....	300	2¼	2	2	— ¼
63½	50	....	....	449,083	$100	Mexican Petroleum Co.	....	Apr. 20, 31	.....	....	....	....	....
14¾	9⅛	13⅞	9½	1,857,912	N.P.	Mid-Continent Pet. Corp.	15c	June 1, 35	4,900	12½	12	12⅜	0
15⅞	8½	14⅛	9⅝	6,648,052	N.P.	Ohio Oil Co.	15c	June 15, 35	11,100	12¾	12	12⅝	+ ⅛
11½	10¾	11⅝	10¾	4,699,885	$5	Pan Amer. Pet. & Transp. Co.	....	Mar. 15, 33	.....	....	....	....	....
2½	⅝	1⅝	½	199,370	N.P.	Panhandle Prod. & Ref'g. Co.	....	.....	600	⅜	†½	½	— ¼
21½	7	12	6½	17,994	$100	do pfd.	....	July 2, 23	10	8⅛	8⅛	8⅛	+ ⅛
14¼	8¼	11⅝	7⅝	2,153,444	5	Petroleum Corp. of America.	50c	May 14, 34	2,000	10¼	9⅞	10	— ¼
20¾	13⅜	23	13¾	4,439,450	N.P.	Phillips Petroleum Co.	25cQ	June 1, 35	23,000	22¾	21½	22½	0
1⅛	⅜	⅝	¼	1,184,817	$25	Pierce Oil Corp.	....	.....	1,500	⅜	¼	¼	0
10¾	4½	6½	3½	150,000	100	do pfd.	....	Feb. 1, 22	200	3¾	3¾	3¾	+ ¼
2	⅞	1⅛	¾	2,500,000	N.P.	Pierce Petroleum Corp.	....	Feb. 16, 31	600	⅞	¾	¾	— ⅛
16¾	7¼	11⅝	6½	1,050,000	$5	Plymouth Oil	25cQ	Mar. 30, 35	3,100	9⅜	9⅛	9¼	— ¼
14⅞	6⅛	9¼	5⅞	3,038,370	N.P.	Pure Oil Co.	....	Sept. 1, 30	86,100	10⅛	8½	9¾	+ 1¼
80	49	71¼	49⅝	130,000	$100	do 8% pfd.	....	Apr. 1, 33	7,390	90½	75½	86	+11
39⅛	28⅝	42½	29½	425,342	$14.00	Royal Dutch Co. (N. Y. shares)	$1.35	July 31, 34	1,200	41⅞	40¾	40¾	— 2½
38⅛	20¾	35⅞	20⅝	1,244,383	N.P.	Seaboard Oil of Del.	25cQ	Mar. 15, 35	4,900	31½	29½	30½	— 1¼
26½	19	35⅛	20⅜	56,148	L2	Shell Transport & Trading Co.	75c	July 23, 34	.....	....	....	....	....
11½	6	11½	5½	13,070,625	N.P.	Shell Union Oil Corp.	....	June 30, 30	17,400	11	10	10½	— ¼
89	57	97	63½	400,000	$100	do pfd. w.w.	....	July 1, 31	1,300	90⅜	88½	89⅝	+ ⅜
16⅜	7¼	18⅜	13½	461,000	10	Simms Petroleum Co.	50c	Feb. 1, 35	4,400	15⅛	14⅜	15	+ ⅛
11½	6	11⅜	6½	1,100,069	25	Skelly Oil Co.	....	Dec. 15, 30	400	10½	10¼	10¼	— ¼
68½	51½	91	60	120,000	100	do pfd.	....	May 1, 31	100	89¾	89¾	89¾	+ ¼
19⅞	12½	15⅜	11	31,701,348	25	Socony Vacuum Oil Co.	15c	Mar. 15, 35	55,000	14	13	13⅜	— ½
114	96½	116	111	764,925	100	S. O. Export Corp. pfd.	$2.50S.A.	Dec. 31, 34	900	112¼	112	112¼	— ¾
42⅞	26½	38⅞	27¾	13,102,900	N.P.	S. O. California	25cQ	June 15, 35	14,400	36⅞	34⅝	36⅞	+ 1⅜
32¾	23¼	27¼	23	15,375,175	$25	S. O. Indiana	25c	June 15, 35	10,300	25⅞	25¼	25¾	— ⅜
41	26	32	26½	320,000	10	S. O. Kansas	50c	Oct. 31, 34	.....	....	....	....	....
50⅛	39¼	50½	35⅝	25,740,965	25	S. O. New Jersey	50c s.a.	June 15, 35	31,200	49⅛	46¾	48⅞	— ⅛
74¼	51⅜	75½	60½	1,590,406	N.P.	Sun Oil Co.	25cQ	June 15, 35	800	75½	75	75	— ½
118	100	121	115½	100,000	$100	do pfd.	$1.50Q	June 1, 35	80	119	118⅞	119	0
3	1¼	3	1⅝	966,979	N.P.	Superior Oil Corp. (Del.)	....	.....	2,500	2⅜	2¼	2¼	0
29¾	19¾	23¾	16½	9,851,236	$25	The Texas Corp.	25cQ	Apr. 1, 35	14,300	21¼	20¼	21¼	+ ⅞
6½	2½	4¾	3¼	930,570	10	Texas Pacific Coal & Oil Co.	....	Dec. 31, 29	6,500	4¾	4¼	4⅝	0
14⅜	8	12	7⅝	5,998,919	N.P.	Tide Water Associated Oil Co.	....	Feb. 16, 31	9,400	11	10¼	10⅝	— ¼
86½	64½	102⅛	84	695,503	$100	do pfd. C. T. V.	$2.00	Apr. 1, 35	1,000	100⅜	98⅞	99⅛	— 1⅜
40	24	32½	26¾	2,191,823	N.P.	Tide Water Oil Co.	35c	Mar. 30, 35	.....	....	....	....	....
100½	80	106⅛	100	199,446	$100	do pfd.	$1.25Q	May 15, 35	4,700	*106⅛	106	106⅛	+ ⅛
20½	11½	20⅛	14¾	4,386,070	25	Union Oil of California	25cQ	May 10, 35	8,600	18⅞	17⅝	18	— ½
25¾	15⅜	26¼	20⅞	1,200,000	N.P.	Union Tank Car Co.	30cQ	Mar. 1, 35	1,200	24¾	24	24	— ½
3⅞	1	1⅝	⅝	759,538	N.P.	Warner Quinlan Co.	....	July 3, 30	300	⅞	¾	¾	0
5¾	2	2⅝	1	431,443	$5	H. F. Wilcox Oil & Gas Co.	....	May 10, 28	200	1⅞	1⅞	1⅞	— ⅛

*New high. †New low. x Ex-div. **On accum. pfd.

Standard Oil Stocks on New York Curb Market

1934 High	1934 Low	1935 High	1935 Low	Shares Issued	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended June 22 Sales Shares	High	Low	Last	Week's Change
11	6	6½	6	40,000	$25	Borne Scrymser Co.	....	Oct. 15, 30	.....	....	....	....	....
38	26	39	30½	200,000	50	Buckeye Pipe Line Co.	75cQ	June 15, 35	200	39	39	39	0
150	116	157	115	120,000	25	Chesebrough Mfg. Co.	$1.50	Mar. 29, 35	.....	....	....	....	....
14⅜	9⅜	18⅞	10	5,977,873	N.P.	Creole Petroleum Co.	....	.....	13,500	18⅜	17½	18	— ¾
37	30	38	34	50,000	$100	Eureka Pipe Line Co.	$1Q	Feb. 1, 35	.....	....	....	....	....
49½	33¼	64	44	9,000,000	N.P.	Humble Oil & Refg. Co.	25cQ	Apr. 1, 35	5,500	63⅝	60⅝	62	— 1
17⅞	12⅝	22½	15⅜	26,742,792	N.P.	Imperial Oil Ltd.	‡25cS.	June 1, 35	12,900	21⅜	19⅞	19⅞	— 1¼
17½	12⅝	22½	16½		N.P.	do registered	25cQ	June 1, 34	100	20	20	20	— 1
6⅞	3¾	5¼	3¾	300,000	$10	Indiana Pipe Line Co.	15c S.A.	May 15, 35	1,000	6	5¼	5½	+ ¼
33⅜	19¾	38⅛	28	14,247,088	N.P.	International Pet. Co.	‡75cS.	June 1, 35	7,700	36	35	35¾	— ⅛
9½	7	9¼	6¾	513,000	$12.50	National Transit Co.	35c	Dec. 15, 34	400	*9¼	8¾	9¼	+ ⅜
4¾	3	3⅜	3	100,000	5	New York Transit Co.	15c S.A.	Oct. 15, 34	200	3⅜	3⅜	3⅜	+ ⅛
7	4⅜	7	5¼	120,000	10	Northern Pipe Line Co.	25c S.A.	June 2, 35	.....	....	....	....	....
91	83½	107¼	90¾	580,796	100	Ohio Oil Co. pfd.	$1.50Q	June 15, 35	600	104	103	104	+ ½
8½	3¾	11	7½	400,000	25	Penn Mex. Fuel Co.	....	Dec. 22, 33	.....	....	....	....	....
5½	3½	4⅝	3⅞	100,000	10	Southern Pipe Line Co.	15c	Mar. 1, 35	100	4½	4½	4½	0
26½	17½	28⅜	21⅜	1,200,000	25	South Penn Oil Co.	30c	Apr. 1, 35	700	25½	24¾	25½	0
47	41	52⅛	45¼	35,000	50	South West Pa. Pipe Lines	$1Q	Apr. 1, 35	.....	....	....	....	....
18⅛	14⅜	21⅜	18	2,606,983	10	S. O. Kentucky	15c	June 15, 35	4,000	21½	20¾	21¼	+ ½
16⅞	8¼	12	7¾	190,822	25	S. O. Nebraska	....	June 20, 34	200	10	9⅞	10	— ½
28½	12⅜	19¾	11½	752,465	25	S. O. Ohio	....	Apr. 16, 34	500	17½	16	16	— 1½
95	77½	99½	91	120,000	100	do 5% pfd.	$1.25Q	Apr. 15, 35	50	96½	96½	96½	+ 1
4¼	2⅜	2⅞	2¼	34,158	25	Swan Finch Oil Corp.	....	Dec. 1, 30	100	2⅝	2⅝	2⅝	+ ⅛

*New high. †New low. ‡Imperial Oil Spec. 37½c June 1, 35. International Pet. Spec. 50c June 1, 35.
x Ex dividend.

Wins Prize for Steady Record

NEW YORK—Herbert Spencer, Richmond, Mich., a truck driver for the White Star division of the Socony-Vacuum Oil Co. has been awarded a prize for his high safety record by H. A. Coffin, general manager.

He drove his truck and private passenger cars more than 500,000 miles without an accident, the company states. He has driven his truck about 310,000 miles in southeastern Michigan over nine and one-half years.

Decker Rejoins Westland

MINOT, N, D.—Fred Decker has rejoined the Westland Oil Co. staff, assisting Cecil Bruce in the sales department. Mr. Decker was with Westland until 1933, and then went to the Kelly-Springfield Tire Co.

Oil and Royalty Stocks on New York Curb

1934 High	1934 Low	1935 High	1935 Low	Par Value	Company	Transactions Week Ended June 22 Sales Shares	High	Low	Last	Week's Change
1¼	⅛	⅜	⅛	N.P.	American Maracaibo..	5,200	⅜	⅛	⅜	+ ⅛
2⅞	1	1⅝	⅝	N.P.	Arkansas Nat. Gas....	300	1¼	1⅛	1⅛	0
2⅝	⅝	1¼	⅝	N.P.	do A.....	900	1⅛	1	1	0
3⅛	1¾	4⅜	2¼	$10	do pfd.....	200	4	3⅝	3⅝	— ⅜
15⅛	12⅜	16¼	14½	N.P.	British Amer. Oil coup.	100	*16¼	16¼	16¼	+ ¼
5⅛	1½	4¼	1⅝	$¼	Carib Syndicate.....	1,400	2⅞	2½	2¾	0
4¼	1¼	2¼	¾	N.P.	Cities Service.....	24,900	1¾	1⅝	1¾	+ ⅛
26⅞	11¼	24½	6¼	$100	do pfd.....	800	17	14⅜	17	+ 2
2½	1⅛	2⅛	⅝	10	do pfd. B.....	100	1½	1½	1½	— ½
23⅛	9	22	6	100	do pfd. BB.....	30	15	13	13	— 8
3¼		⅛	1¼	⅝	N.P.	Colon Oil Corp.....	3,800	½	½	½	0
1¾		⅝	⅛	⅛	N.P.	Columbia Oil & Gas vtc.	300	¼	¼	¼	— 1/16
2		1⅛	1¾	1	$1	Consolidated Royalty..	.....	.....	.....	.....	.....
3⅞		⅛	⅛	⅜	N.P.	Cosden Oil.....	200	9/16	9/16	9/16	0
9		2½	2	1	$100	do pfd.....	.....	.....	.....	.....	.....
1¼		¾	⅞	⅝	N.P.	Crown Central Pet.....	900	⅞	¾	11/16	+ 1/16
7½		4⅛	6⅝	4¼	N.P.	Darby Petroleum.....	800	6⅜	6¼	6¼	0
2¼		1	2	¾	N.P.	Derby Oil & Refg.....	.....	.....	.....	.....	.....
.....		.....	20	20	N.P.	do pfd.....	.....	.....	.....	.....	.....
76¾		50	74¾	50¼	$25	Gulf Oil Corp.....	4,700	68½	65	66	— 2⅛
4⅛		1¼	4¼	1⅜	N.P.	Indian Ter. Illg. Oil A	100	2⅝	2⅝	2⅝	— ⅜
4⅛		1¼	4¼	1⅜	N.P.	do B.....	100	2½	2½	2½	— ½
3		1⅛	3	1⅞	N.P.	Kirby Petroleum.....	1,900	2⅜	2½	2⅜	0
⅞		⅛	¾	1/16	$25	Leonard Oil Dev.....	600	7/16	⅜	⅜	— 1/16
6		3⅛	6⅝	3½	N.P.	Lion Oil Refg.....	.....	.....	.....	.....	.....
8⅛		4¼	6¼	4½	N.P.	Lone Star Gas.....	1,900	5⅞	5¼	5⅞	+ ⅜
8¾		5¼	8¼	4	N.P.	Margay Oil Co.....	200	*8¼	8	8¼	+ ¾
2¼		1	1	⅛	N.P.	Mexico-Ohio Oil.....	.....	.....	.....	.....	.....
5		2⅝	3⅜	2	N.P.	Michigan Gas & Oil...	600	2⅞	2⅞	2⅞	+ 1/16
2⅞		1	2⅛	⅞	N.P.	Mid. States Pet. A vtc.	1,600	1⅞	1½	1¾	+ ¼
1½		¼	⅜	¼	N.P.	do B vtc.....	200	⅜	⅜	⅜	0
¾		⅛	⅛	⅛	$1	Mountain & Gulf.....	100	¼	¼	¼	— 1/16
5½		4	5½	4⅛	10	Mountain Producers...	1,000	5¼	5¼	5¼	0
18⅛		⅛	18⅛	13½	N.P.	National Fuel Gas....	2,200	17¾	17½	17½	— ⅛
2½		1¾	2⅝	2	$5	New Bradford Oil.....	500	2¼	2¼	2¼	0
3⅜		1¾	3⅛	2	N.P.	North Central Texas...	500	3	3	3	0
⅜		⅛	⅜	⅛	N.P.	North European.....	.....	.....	.....	.....	.....
10⅛		8¼	11¾	9½	N.P.	Oil Stocks Ltd. A.....	100	11½	11½	11½	0
2⅝		⅞	2⅛	1¼	N.P.	Pantepec of Venezuela.	11,900	2⅛	1⅞	1⅞	— ⅛
⅝		⅛	⅜	⅛	N.P.	Producers Royalty....	200	⅛	⅛	⅛	— 1/16
63		33½	70	34¾	$100	Pure Oil 6% pfd.....	2,520	*70	60	66	+ 7¼
1½		¾	1	½	N.P.	Red Bank Oil.....	.....	.....	.....	.....	.....
1		⅜	¼	⅜	N.P.	Reiter-Foster Oil.....	700	¼	3/16	3/16	— 1/16
4		½	1	⅝	$25	Richfield Oil pfd.....	300	⅞	¾	¾	— 1/16
1¼		¾	2¼	1		Root Refining.....	.....	.....	.....	.....	.....
8¾		3½	10¼	4	10	do conv. pr. pfd....	200	9	9	9	0
.....		.....	.....	.....	$10	Royalty Corp. pfd.....	.....	.....	.....	.....	.....
3⅜		⅞	1½	⅝	N.P.	Ryan Consolidated....	100	1⅛	1	1⅛	+ ⅛
1		⅜	1	¾	$10	Salt Creek Consolidated	500	⅜	⅜	⅜	0
7⅞		5	7½	5½	10	Salt Creek Prod.....	700	7⅛	6⅞	7⅛	+ ⅛
6		4⅞	6¾	4¾	N.P.	Southland Royalty....	800	6	5½	6	+ ½
2		⅜	1¼	⅜	$5	Sunray Oil.....	6,100	1¼	1⅛	1¼	+ ⅛
.....		.....	3⅜	2	$1	Swiss Oil Corp.....	5,200	3¼	2½	2½	— ¾
11		4⅜	6⅞	5	N.P.	Texon Oil & Land.....	1,000	5⅞	5⅛	5½	— ⅜
1⅛		½	1¾	⅜	$5	Venezuela Petroleum..	7,600	1¼	1	1⅛	— ⅛
5¼		2¾	6	3½	1	Woodley Petroleum....	5,700	5½	4⅝	4¾	— ⅜

*New high. †New low.

New York Bonds

Week ended June 22

	High	Low	Last	Change
Atlantic Refg. deb. 5s...	107¾	107⅝	107⅝	0
Calif. Pet. 5s.....	101½	101½	101½	0
Calif. Pet. 5½s.....	101½	101⅜	101½	0
Houston Oil 5½s '40....	97	96¼	97	+ ½
Pan Amer. Pet. of Calif. 6s '40.....	40	40	40	+1
Pan Amer. Pet. of Calif. 6s ctfs.....	41⅞	38¼	41⅞	+2⅜
Phillips Pet. 5¼s.....	103¼	103	103⅛	0
Pure Oil 5½s.....	101⅝	101⅛	101¼	— ⅛
Pure Oil 5½s.....	102⅛	101¾	102	— ¼
Richfield Oil of Calif. 6s ctfs.....	34	30½	34	+3¾
Shell Union Oil 5s '47...	103¼	102¾	103¼	+ ¼
Shell Pipe Line 5s '52...	103⅝	103½	103⅝	0
Sinclair Con. Oil 7s A...	101⅞	101¾	101¾	— ⅛
Sinclair Con. Oil 6½s B..	101¾	101⅝	101⅝	— ⅛
Skelly Oil 5½s.....	103½	102¾	103	+ ⅜
S. O. N. Y. 4½s.....	103½	103¼	103½	0
Union Oil of Calif. 6s A..	119¾	119	119¼	0
Warner-Quinlan 6s.....	34⅝	34	34	0

Levorsen Leaves Tide Water

TULSA, June 22.—A. I. Levorsen, president of the American Association of Petroleum Geologists, has resigned as chief geologist of the Tide Water Oil Co. of Oklahoma. He has lived in Houston for more than a year. His extensive interests in the Fitts pool, Okla. and in Kentucky, made it necessary to devote full time to them.

Pittsburgh Stock Exchange

Transactions week Ended June 21, 1935

	Sales	High	Low	Last	Change Over Week
†Cities Serv.....	79	2	1¼	2	+ ⅞
†Continental Oil..	30	21¼	21¼	21¼	+ ¼
Devonian Oil....	95	13½	13½	13½	— ½
Lone Star Gas....	3,175	5⅞	5¼	5¾	+ ¼
† do 6 p.c. conv. pfd.....	135	89	88¾	89	+ ¼
† do 6½ p.c. pfd..	550	101	100½	100½	— ¼
Shamrock Oil & Gas.....	250	1½	1¼	1½	+ ¼
†Socony-Vacuum..	435	14⅛	13⅛	13⅜	— ¼
†Standard Oil of N. J.....	678	49⅛	46⅞	47⅛	—2¼
West. Pub. Serv..	4,489	4⅞	4½	4⅞	0

†Unlisted.

Cleveland Stock Exchange

Transactions Week Ended June 22, 1935

	Sales	High	Low	Last	Change Over Week
Canfield Oil.....	.....	.....	.....	.....	.....
Nat'l Refining....	.....	.....	.....	.....	.....
do pfd.....	30	50⅛	50	50⅛	—97⅛

New York Curb Bonds

Week ending June 22

	High	Low	Last	Change
Cities Serv. 5s '50.....	55	50	54¾	+4¾
Cities Serv. 5s '66.....	54	49¼	54	+4½
Cities Serv. G. 5½s '42..	87	84½	86¾	+2¾
Empire O & R 5½s '42..	68	66½	67¾	+1
Gulf Oil 5s '47.....	107¾	106⅞	107⅛	+ ⅜
Valvoline Oil 7s '37	97½	97½	97½	+1½

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Changes in Oil Stock Holdings Reported by Commission

WASHINGTON, June 22

Disposal of 35,100 shares of Socony Vacuum Oil Co. by John D. Rockefeller, Jr., was the largest stock turnover in May transactions of officers, directors and principal stockholders of oil companies, according to a report today by the Securities and Exchange Commission. Besides giving the transactions, the report also lists share holdings as of May 31, as follow:

Issuer, Security and Holder	Net Change in Holdings	Share-Holdings Reported at End of Month
Associated Oil Co., common		
Tidewater Asso. Oil, New York (X)	+90	2,244,317
Indian Terr. Illum. Oil, A common		
Cities Service Co., New York (X)	+200	1,204,804
Indian Terr. Illum. Oil, B common		
Cities Service Co. (X)	+800	301,121
Pan Amer. Pet. & Trans. Co., common		
Amer. Trading Corp., Baltimore (X)	+100	632,625
S. O. Indiana, Chicago (X)	+1,200	3,694,006
Simms Petroleum Co., common		
Monroe C. Gutman, New York (D)	.....	1,500
*Lehman Brothers	+1,000	28,650
Skelly Oil Co., common		
Henry C. Olcott, Tulsa (D)	+100	.....
William G. Skelly, Tulsa (OD)	.....	6,758
†Midland Sec. Co.	+1,100	20,862
†Sowestern Sales Corp.	+500	3,200
†Gertrude Skelly	+5,700	14,172
A. F. Winn, Tulsa (D)	.....	601
Skelly Oil Co., 6% cumulative Pfd.		
Henry C. Olcott (D)	.....	125
William G. Skelly (OD)	.....	600
†Midland Sec. Co.	.....	700
†Sowestern Sales Corp.	.....	100
†Gertrude Skelly	+500	500
Socony Vacuum Oil Co. capital		
J. D. Rockefeller, Jr. (X)	—35,100	4,956,970
S. O. California, common		
Richard W. Hanna, San Francisco (OD)	—2,500	2,135
M. E. Lombardi, San Francisco (D)	+100	596
Sun Oil Co., common.		
Frank Cross, Philadelphia (OD)	—300	7,373
J. Howard Pew, Philadelphia (OD)	—1,238	190,221
J. N. Pew, Jr., Philadelphia (OD)	—508	173,368
Sun Oil Co., 6% Cumulative Pfd.		
J. Howard Pew (OD)	.....	745
J. N. Pew, Jr. (OD)	.....	145
The Texas Corp., common		
T. Rieber, New York (OD)	+300	1,816
Tide Water Assoc. Oil Co., common		
J. Paul Getty, Los Angeles (D)	.....	.....
‡Getty, Inc.	40,500	193,454
Walter Glasser, New York (O)	—100	100
William F. Humphrey, San Francisco (O)	+50	6,410
Union Oil of California, common		
W. R. Edwards, Los Angeles (O)	+50	150
Dwight Whiting, Los Angeles (D)	.....	2,900
**Whiting Company	—450	14,325
**As guardian	.....	47

*Held indirectly by Monroe C. Gutman.
†Held indirectly by Wm. G. Skelly.
‡Held indirectly by J. Paul Getty.
**Held indirectly by Dwight Whiting.
(O) Officer.
(D) Director.
(X) Principal stockholder, i. e., that is one holding 10 per cent or more.

Tide Water Refunding

NEW YORK—Announcement by Tide Water Oil Co. that it has called for redemption all its outstanding 5 per cent cumulative convertible preferred stock ($100) calls attention to the number of important refunding operations carried out by some of the major oil companies so far this year.

Tide Water's preferred stock, of which there is 196,246 shares outstanding, will be redeemed on Aug. 15, 1935, at $105 per share plus a final quarterly dividend of $1.25 per share. Bank loans have been arranged to take care of the redemption.

The largest redemption of the year was that of the Standard Oil Co. (New Jersey) which redeemed $90,000,000 5 per cent debentures, due in 1946, on Feb. 1, 1935.

Gulf Oil Corp., Socony-Vacuum Oil Co., Phillips Petroleum Co., Union Oil Co., and Consolidated Oil Co. are among companies which have either called some of their bonds or have signified their intention of doing so.

Bond retirements so far this year follow:

Co. and Amt.	Rate	Due	Retirement Date	New Borrowing
Std. Oil Co. (N. J.):				
Std. Oil. N. J.				
$90,000,000	5s	1946	Feb. 1	$82,000,000
Anglo-Amer. Oil				
$5,445,010	5½s	.....	July 15	.....
Colon'l Bea. Oil				
$1,028,000	6s	1936	July 15	.....
Consol. Oil				
$31,038,700	7s	1937	*	50,000,000
$17,743,000	6½s	1938	*	to
Consol. Oil pf.				63,000,000
$12,324,800	8%	.....	*	
Gulf Oil Corp.:				
Gulf Oil Corp.				
$26,997,000	5s	1937	June 1	*
Gulf Bldg. Co.				
$4,466,847	*	1936	July 28	*
Soc.-Vac. Oil Co.:				
†Std. Oil N. Y.				
$13,982,000	4½s	1948	Feb. 15	27,000,000
Gen'l Petrol.				
$14,633,000	5s	1940	Feb. 15	
Union Oil Co.				
$13,463,000	5s	1945	June 1	13,500,000
Calif. Petrol. Corp.				
$10,500,000	5s-5½s	1939 & 1938	Aug. 1	*
Phillips Petrol.				
$5,991,000	5¼s	1939	June 1	.....

*Not given. †Serial.

Pure Proposes $32,000,000 Issue for Refunding

CHICAGO—Directors of the Pure Oil Co. have asked stockholders to approve an issue of $32,000,000 15-year sinking fund notes to refund outstanding notes and create additional working capital.

The company proposes to redeem $27,500,000 5½ per cent sinking fund notes of which $12,500,000 are due Aug. 1, 1937, and the balance due March 1, 1940. It is expected that the interest rate of the new issue will be materially lower than the rate of the notes to be retired, thereby making a savings in interest charges.

The new issue will carry non-detachable warrants giving the right to purchase common shares in the amount of 30 shares for each $1000 of notes. The exact terms and amount of these non-detachable warrants has not been determined as yet, but it is thought that they should provide for purchase of common stock at $15 per share on or before July 1, 1938, and

that the price after that date should be increased by $2.50 per share during each following three-year period, which would result in a final price for the last three-year period ended July 1, 1950, of $25 per share.

In his letter to stockholders outlining the plan, Henry M. Dawes, president, said that the company's earnings have increased substantially since the first of the year. Net income the first four months was approximately $1,700,000, after all charges, which is a material improvement over the same period of 1934, he said.

S. O. Ohio Quarterly

CLEVELAND—In the first quarterly statement ever issued by Standard Oil Co. of Ohio, the company shows net loss for the three months ended March 31, 1935, of $632,207, after all charges. Net sales during the three month period were $8,875,631; costs and expenses $8,914,863; operating loss $39,232.

Operations since the end of the first quarter have been on a much firmer basis, owing to advances in the price of gasoline throughout Ohio.

William H. Roeser Dies

TULSA, June 22.—William H. Roeser, independent oil producer, died June 18 at his home in Fort Worth from a heart attack. He was 60 years old.

Roeser was one of the pioneer operators in Oklahoma. He came into the oil business at Beaumont and in 1905 went to Cleveland, Okla. His first big success was in the Glenn pool. He moved to Texas 15 years ago and in recent years has been associated with his brother, Charles F. Roeser. He is survived by his widow, one son and one daughter.

Oil Dividends

Declared Last Week

Company	Amount	Record	Payable
Continental Oil	25c	July 2	July 31
Tide Water Oil 5% pfd*	$1.25	Aug. 7	Aug. 15

*5% pfd. called for retirement Aug. 15, '35.

Dividends Waiting Payment

Barnsdall Corp.	†	June 1	June 30
Canfield Oil Co. 7% pfd. q.	$1.75	June 20	June 29
Chesbrough Mfg. E.	50c	June 7	June 28
Chesbrough Mfg. q.	$1.00	June 7	June 28
Consolidated Oil pfd. . q	$2.00	Aug. 1	Aug. 15
Darby Petroleum	25c††	June 30	July 15
Humble Oil & Refg. q.	25c	June 1	July 1
McColl Frontenac q. pfd.	$1.50	June 29	July 15
Northern Pipe Line s.	25c	June 14	July 1
Southwest Pa. Pipe q.	$1.00	June 15	July 1
South Penn Oil q.	30c	June 14	June 29
Stand. of Ohio 5% pfd., q.	$1.25	June 29	July 15
Standard Oil Exp. pfd. s.	$2.50	June 8	June 29
Swiss Oil Corp.	10c	June 15	July 1
Texas Corp. q.	25c	June 7	July 1
Tide Water Asso. Oil 6% pfd.**	$3.00	June 7	July 1
Tide Water Oil‡	30c	June 7	June 29

**Covers payments due April 1, '35 and July 1, '35.
†Stock Div.; one-half share of Barnsdall Ref. for each share of Barnsdall Corp. held.
‡Paid 30c March 30, '35.
††Darby last paid 25c on Jan. 25.

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PETROLEUM GEOLOGISTS AND ENGINEERS
Grant Building PITTSBURGH, PA.

Miscellaneous

WHAT IT COSTS

"For Sale," "Wanted to Buy," "Help Wanted," "Business Opportunities."

"Miscellaneous" classifications, set in type this size without border—10 cents a word. Minimum charge, $3.00.

"Position Wanted"—5 cents a word. Minimum charge $1.00.

Advertisements set in special type or with border—$4.00 per column inch.

Copy must reach us not later than Friday preceding date of issue.

All advertisements carried on this page are payable in advance.

At left: Illustration showing a typical running board mounting of Viking Pump . . . using conventional chain drive. This illustrates the ease with which the Viking Truck Mounting Pump can be adapted to any type of installation.

VIKING *Truck Mounting* PUMPS

Combine SIMPLICITY--STURDINESS--ECONOMY of OPERATION--a Long Carefree Life

The same simplicity, sturdiness, ease of installation and long life that characterize Viking Fuel Oil Pumps will be found in Viking Truck Mounting Pumps. Embodying the same "Original Gear Within A Gear . . . Two Moving Parts" Principle . . . Viking Truck Mounting Pumps speed up loadings and unloadings . . . permit more "Trips Per Day" . . . make for "Bigger Profits."

Offered in capacities of 20, 35, 50, 90 and 200 G.P.M. Viking Relief Valve on Pump Head included as standard equipment. New improved base with radial thrust bearings insures against mis-alignment. Driven by conventional power-takeoff units or other similar means from truck transmission or drive-shaft.

NOW . . . with the motoring season at its height . . . before the fuel delivery season gets under way again . . . is the time to equip your truck tanks with VIKING TRUCK MOUNTING PUMPS. Write today for Special Bulletin and Prices.

Just A Few of The Prominent Users of VIKING TRUCK MOUNTING PUMPS

Among the hundreds of users of Viking Truck Mounting Pumps are the following:

Atlantic Refining Company
Colonial-Beacon
Deep Rock Oil Company
Gulf Refining Company
Pure Oil Company
Sinclair Oil Company
Standard Oil Company (*Indiana and Kentucky*)
and many others

INDEPENDENTS

Carbon Coal Company, Des Moines
Cosden Oil Company, Chicago
Crescent-Conoco Co., Minneapolis
Hassett Oil Co., Minneapolis
Jenney Oil Co., Boston
Wadham's of Wisconsin
Yale Oil Corp., of Montana
and many others

Viking Pump Company
Cedar Falls, Iowa

At right: A 90 G.P.M. Viking Truck Mounting Pump was installed as an integral part of this 3600 gallon truck tank operated by the Yale Oil Corp. of Montana. In this case the pump was "direct-connected."